EXHIBIT B

REPORTING AND DELIVERABLES REQUIREMENTS

Table of Contents

1.0 CONTRACT REPORTS/DELIVERABLES DISTRIBUTION

1.1 Report Deliverable Schedule

The following table reiterates the contract reporting and deliverables requirements and specifies the distribution that is required for each deliverable unless revised in individual task orders.

NOTE: Specific recipient names and addresses are subject to change during the term of the contract. The Contracting Officer (CO) will notify the Contractor, in writing, of such changes when they occur.

TABLE 1

Item		No. of Copies[A]	Delivery Schedule	Distribution		
				TOPO	SMO	[B]
A.	Sample Chain of Custody Records/Traffic Reports	1	3 working days after receipt of last sample in the SDG[2].	X		
B.[3]	Sample Data Package[C]	2	35 days after VTSR[1] of last sample in the SDG.	X	X	
C.[3]	Data in Computer-Readable Format	1	35 days after VTSR[1] of last sample in the SDG.	X	X	
D.[3]	Results of Intercomparison Study/PE Sample Analysis Study	1	35 days after VTSR[1] of last sample in the SDG.	X		
E.[3,4]	Complete SDG File[3]	1	35 days after VTSR[1] of last sample in the SDG.	X		
F.[5]	Quality Assurance Plan (QAP)	1	Revise within 60 days after contract award. Submit within 7 days of receipt of written request by the PO or CO to recipients, as directed.	As Directed		

TABLE 1 (Con't)

Item		No. of Copies[A]	Delivery Schedule	Distribution		
				TOPO	SMO	[B]
G.[5]	Updated Standard Operating Procedures (SOPs)	1	Revise within 60 days after contract award. Submit within 7 days of receipt of written request from the CO or PO to recipients, as directed.	As Directed		
H.	GC/MS Tapes	Lot	Retain for 3 years after data submission. Submit within 7 days after receipt of written request from the CO or PO.	As Directed		
I.	Extracts	Lot	Retain for one (1) year after data submission. Submit within 7 days after receipt of written request by the TOPO, PO or CO.	As Directed		

Footnotes:

[A]The number of copies specified is the number of copies required to be delivered to each recipient.

[B]Project Officer (PO).

[C]Contractor-concurrent delivery to a Government designated recipient may be required upon request by the PO. Retain for one (1) year after data submission, and submit as directed within 7 days after receipt of written request by the PO or CO.

[1]Validated Time of Sample Receipt (VTSR) is the date of sample receipt at the Contractor's facility, as recorded on the shipper's delivery receipt and sample Chain of Custody Record/Traffic Report.

[2]The Sample Delivery Group (SDG) will be defined in individual task orders.

[3]**DELIVERABLES ARE TO BE REPORTED TOTAL AND COMPLETE.** Concurrent delivery is required. This includes resubmission of both the hardcopy and electronic deliverable. The date of delivery of the SDG, or of any sample

within the SDG, is the date all samples have been delivered. **If the deliverables are due on a Saturday, Sunday, or Federal holiday, then they shall be delivered on the next business day. Deliverables received after this time shall be considered late.**

[4]A complete SDG file will contain the original Sample Data Package, plus all the original documents described in Exhibit B, Section 2.6, and Exhibit E.

[5]See Exhibit E and F for more description; time is cited in calendar days.

1.2 Distribution

The following addresses correspond to the "Distribution" column in Table 1 of Section 1.1.

SMO: USEPA Sample Management Office (SMO)[6]
15000 Conference Center Drive
Chantilly, VA 20151-3808

Task Order Project Officer (TOPO): As identified in individual task orders.

Project Officer (PO):

Mailing Address: USEPA OSWER Analytical Services Branch
Ariel Rios Building (5204G)
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460
Attn: Dioxin Program Manager/Project Officer

Fed-Ex/Overnight Delivery: USEPA OSWER Analytical Services Branch
1235 S. Clark Street
Crystal Gateway I, 12th Floor
Arlington, VA 22202
Attn: Dioxin Program Manager/Project Officer

[6]SMO is a Contractor-operated facility operating under the Sample Management Office (SMO) contract awarded and administered by USEPA.

2.0 REPORTING REQUIREMENTS AND ORDER OF DATA DELIVERABLES

2.1 Introduction

The Contractor shall provide reports and other deliverables as specified in the Contract Schedule. The required content and form of each deliverable are described in this exhibit. All reports and documentation must be:

- Legible;
- Clearly labeled and completed in accordance with instructions in this exhibit;
- Arranged in the order specified in this section;
- Paginated sequentially in ascending order starting from the Sample Delivery Group (SDG) Narrative; and
- Copies must be legible and double-sided.

NOTE: Complete SDG Files (CSFs) need not be double-sided. (The CSF is composed of original documents.) However, Sample Data Packages delivered to the Sample Management Office (SMO) must be double-sided.

2.1.1 Requirements for each deliverable item are specified in Sections 2.3 through 2.9. Prior to submission, the Contractor shall arrange items and the components of each item in the order listed in these sections.

2.1.2 The Contractor shall use EPA/assigned Case numbers, SDG numbers, EPA/assigned Sample Numbers, and Task Order numbers (if applicable) to identify samples received under this contract, both verbally and electronically and in reports and correspondence. The Contract number and task order number if applicable shall be specified in all correspondence.

2.2 Resubmission of Data

2.2.1 If submitted documentation does not conform to the instructions in this exhibit, the Contractor shall be required to resubmit such documentation with deficiency(ies) corrected, at no additional cost to the Government.

2.2.2 Whenever the Contractor is required to submit or resubmit data as a result of an onsite laboratory evaluation, or through Project Officer (TOPO) action or request, the data must be clearly marked as ADDITIONAL DATA and must be sent to all contractual data recipients as well as designated recipients. A cover letter will be included, by the Contractor describing what data are being delivered, to which project the data pertain, and who requested the data. A copy of the cover letter shall be submitted to the Contracting Officer (CO).

2.3 Quality Assurance (QA) Plan and Standard Operating Procedures (SOPs)

The Contractor shall adhere to the requirements in Exhibits E and F.

2.4 Sample Chain of Custody Records/Traffic Reports

2.4.1 Each sample received by the Contractor shall be labeled with a designated Sample Number and will be accompanied by a Chain of Custody Record/Sample Traffic Report bearing the Sample Number and descriptive information regarding the sample. The Contractor shall complete the Chain of Custody Record/Traffic Report, recording the date of sample receipt and sample condition upon receipt for each container, and shall sign the Chain of Custody Record/Traffic Report. Information shall be recorded for each sample in the SDG.

2.4.2 The Contractor shall submit Chain of Custody Records/Traffic Reports in SDG sets (i.e., Chain of Custody Records/Traffic Reports for all samples in an SDG shall be clipped together), with a cover sheet attached. The Traffic Report Cover Sheet shall contain the following items:

- Laboratory name;
- Contract number and Task Order number;
- Sample analysis price;
- Case number; and
- List of designated Sample Numbers of all samples in the SDG, identifying the **first** and **last** samples received, and their Laboratory Receipt Dates (LRDs).

2.4.3 Each Chain of Custody Record/Traffic Report must be clearly marked with the SDG number. This information should be entered below the LRD on the Chain of Custody Record/Traffic Report. In addition, the Chain of Custody Record/Traffic Report for the last sample received in the SDG must be clearly marked "SDG - FINAL SAMPLE". The designated Sample Number of the first sample received in the SDG is the SDG number. When several samples are received together in the first SDG shipment, the SDG number will be the lowest Sample Number (considering both alpha and numeric designations) in the first group of samples received under the SDG.

2.4.4 If samples are received at the laboratory with multi-sample Chain of Custody Records/Traffic Reports, all the samples on one multi-sample Chain of Custody Record/Traffic Report may not necessarily be in the same SDG. In this instance, the Contractor must make the appropriate number of photocopies of the Chain of Custody Record/Traffic Report and submit one copy with each Chain of Custody Record/Traffic Report Cover Sheet.

2.5 Sample Data Package

The Sample Data Package will include data for analyses of all samples in one SDG, including field samples, dilutions, re-analyses, blanks, and Laboratory Control Samples (LCSs). The Sample Data Package is divided into the three major units [SDG Narrative, Chain of Custody Records/Traffic Reports, and chlorinated dibenzo-p-dioxins (CDD), chlorinated dibenzofurans (CDF), and chlorinated biphenyl (CB) congener data] described below. The Contractor will retain a copy of the Sample Data Package for one (1) year after final acceptance of data. After this time, the Contractor may dispose of the package.

2.5.1 SDG Narrative

2.5.1.1 This document will be clearly labeled "SDG Narrative" and will contain: Laboratory name; Case number; designated Sample Numbers, differentiating between initial analyses and re-analyses; SDG number; Contract number; Task Order number; and detailed documentation of any quality control, samples, shipment and/or analytical problems encountered in processing the samples reported in the data package.

All Gas Chromatograph (GC) columns used for analysis shall be documented in the SDG Narrative. List the GC Column identification: brand-name, internal diameter in mm, and length in meters, coating material, and film thickness.

NOTE: If a column is used that has different first and last eluting isomers than the DB-5 column, the Contractor shall fully document, in the SDG Narrative, the order of elution of the isomers and identify the first and last eluting isomers for that particular column for the Window Defining Mix (WDM) and the Mid-Point Calibration Standard (CS3) Solution.

2.5.1.2 Whenever data from sample re-analyses are submitted, the Contractor shall state the reason in the SDG Narrative for each re-analysis. The Contractor must also include any problems encountered, both technical and administrative, the corrective actions taken and the resolutions, and an explanation for all flagged edits (i.e., manual edits) on quantitation lists. This includes documenting the alternative technique used to determine cooler temperature if a temperature indicator bottle is not present in the cooler. The Contractor shall also provide, in the SDG Narrative, sufficient information including equations or curves to allow the recalculation of sample results from raw instrument output. The Contractor shall also include a discussion of any requested SOW modifications. This includes attaching a copy of the approved modification form to the SDG Narrative.

2.5.1.3 The SDG Narrative shall contain the following statement, verbatim: **"I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature."** This statement shall be directly followed by the original signature of the Laboratory Manager or his/her designee with a typed line below it containing the signer's name and title, and the date of signature. All copies of the SDG Narrative shall be signed in an original signature.

2.5.2 Chain of Custody Records/Traffic Reports

2.5.2.1 The Contractor shall include a copy of each Chain of Custody Record/Traffic Report submitted in Section 2.4 for all of the samples in the SDG. The Chain of Custody Records/Traffic Reports shall be arranged in increasing Sample Number order, considering both letters and numbers in ordering samples. Copies of the Chain of Custody Record/Traffic Report Cover Sheet shall be included with the copies of the Chain of Custody Records/Traffic Reports.

2.5.2.2 If samples are received at the laboratory with multi-sample Chain of Custody Records/Traffic Reports, all the samples on one multi-sample Chain of Custody Record/Traffic Report may not necessarily be in the same SDG. In this instance, the Contractor must make the appropriate number of photocopies of the Chain of Custody Record/Traffic Report so that a copy is submitted with each applicable data package.

2.5.2.3 In any instance where samples from more than one multi-sample Chain of Custody Record/Traffic Report are in the same data package, the Contractor must submit a copy of the Chain of Custody Record/Traffic Report Cover Sheet with copies of the Chain of Custody Records/Traffic Reports.

2.5.3 CDD/CDF Data

2.5.3.1 CDD/CDF Sample Data

Sample data shall be arranged in packets with the CDD/CDF Sample Data Summary (Forms I-HR CDD-1, I-HR CDD-2, and CDD-3, if applicable), followed by the raw data for the sample and Form II-HR CDD. These sample packets shall be placed in order of increasing designated Sample Number, considering both letters and numbers.

2.5.3.1.1 Sample Data Summary (Form I-HR CDD-1)

Tabulated results (identification and quantification) of the specified target analytes and recoveries of the associated labeled compounds shall be included. The validation and release of these results are authorized by a specific, signed statement in the SDG Narrative (see Section 2.5.1.3). In the event that the Laboratory Manager cannot verify all data reported for each sample, the Laboratory Manager shall provide a detailed description of the problems associated with the sample in the SDG Narrative.

2.5.3.1.2 Toxicity Equivalence Summary (Form I-HR CDD-2)

Tabulated adjusted concentrations for the target analytes based on toxicity equivalent factors. This form shall be included, even if no target analytes are positively identified.

2.5.3.1.3 Second Column Confirmation (Form I-HR CDD-3)

Tabulated results (identification and quantitation) of 2,3,7,8-TCDF and the recoveries of its corresponding labeled compound on a second GC column if original analysis was performed on a DB-5 GC column, or equivalent.

2.5.3.1.4 Selected Ion Current Profile (SICP) for each sample or sample extract, including dilutions and re-analyses.

SICPs must be presented so the two quantitation ions, any relevant labeled compounds, and diphenyl ether interferents are on one page. The internal standards can be presented on another page. The SICP must show the full time window scanned for each ion. Enlarge any SICP peak for any 2,3,7,8-substituted congener present below the signal-to-noise (S/N) ratio of 10 or below the Contract Required Quantitation Limit

(CRQL). Each SICP must contain the following header information:

- Designated Sample Number;
- Date and time of analysis;
- Absolute Retention Time (RT) (and scan number if available) of identified compounds;
- High Resolution Gas Chromatography/High Resolution Mass Spectrometry (HRGC/HRMS) Instrument ID;
- Lab File ID; and
- Analyst ID.

2.5.3.1.5 If automated data system procedures are used for preliminary identification and/or quantitation of the target compounds, the complete data system report, including but not limited to quantitation reports and area summaries, shall be provided in all Sample Data Packages, in addition to the SICPs. The complete data system report shall include all of the information listed below. For laboratories which do not use the automated data system procedures, a laboratory "raw data sheet" containing the following information shall be included in the Sample Data Package, in addition to the SICP:

- Designated Sample Number;
- Date and time of analysis;
- RT (and scan number if available) of identified target compounds;
- Ions used for quantitation with measured areas;
- Copy of area table from data system;
- HRGC/HRMS Instrument ID;
- Lab File ID; and
- Analyst ID.

2.5.3.1.6 In all instances where the data system report has been edited, or where manual integration or quantitation has been performed, the HRGC/HRMS operator shall identify the changes made to the report, by initialing and dating all handwritten changes, and shall include the integration scan range. In addition, a hardcopy printout of the chromatogram displaying the manual integration shall be included in the raw data.

NOTE: Second column confirmation is required for all samples in which 2,3,7,8-TCDF is positively identified at, or above, the CRQL by analysis on a DB-5 (or equivalent) HRGC column, or if 2,3,7,8-TCDF is reported as an Estimated Maximum Possible Concentration (EMPC) at, or above, the CRQL.

2.5.3.1.7 Total Homologue Concentration Summary (Form II-HR CDD)

Tabulated total homologue concentrations shall be completed for each sample, blank, and QC sample analyzed. EMPC values shall be flagged "*", and the Estimated Detection Limit (EDL) shall be qualified "U" on the form.

2.5.3.2 Quality Control Data

2.5.3.2.1 Lab Control Sample Summary (Form III-HR CDD) - in order by designated Sample Number assigned to the LCS.

2.5.3.2.2 Method Blank Summary (Form IV-HR CDD) - in order by designated Sample Number assigned to the blanks.

2.5.3.2.3 Window Defining Mix Summary (Form V-HR CDD-1) - in order by designated Sample Number assigned to the WDM.

A Window Defining Mix Summary must be completed for each 12-hour period. The retention time for the first and last eluting CDD and CDF isomers are included on this form.

2.5.3.2.4 Chromatographic Resolution Summary (Form V-HR CDD-2) - in order by designated Sample Number assigned to the standard used to evaluate the column resolution.

A Chromatographic Resolution Summary must be completed for each 12-hour period.

2.5.3.2.5 Analytical Sequence Summary (Form V-HR CDD-3) - This form is used to report the analytical sequence for CDD/CDF analysis for all GC columns and instruments.

2.5.3.3 Calibration Data

2.5.3.3.1 Initial Calibration Data (Form VI-HR CDD-1, CDD-2) - in order by instrument, if more than one instrument is used.

2.5.3.3.1.1 Perfluorokerosene (PFK) mass resolution for initial calibration shall be provided and labeled with designated Sample Number, date and time, HRGC/HRMS Instrument ID, Lab File ID, and Analyst ID.

2.5.3.3.1.2 CDD/CDF standard(s), SICPs, and complete data system reports including area summaries for the initial (five-point) calibration shall be labeled as stated in Sections 2.5.3.1.4 and 2.5.3.1.5.

2.5.3.3.1.3 When more than one initial calibration is performed, the data must be arranged in chronological order by instrument.

2.5.3.3.2 Continuing Calibration Data (Form VII-HR CDD-1, CDD-2) - in order by instrument, if more than one instrument is used.

2.5.3.3.2.1 PFK mass resolution for continuing calibration shall be provided for each 12-hour period and labeled with designated Sample Number, date and time, HRGC/HRMS Instrument ID, Lab File ID, and Analyst ID.

2.5.3.3.2.2 CDD/CDF standard(s), SICPs, and complete data system reports including area summaries for all continuing calibrations

shall be labeled as specified in Sections 2.5.3.1.4 and 2.5.3.1.5.

2.5.3.3.2.3 When more than one continuing calibration is performed, the data must be arranged in chronological order, by instrument.

2.5.3.3.2.4 In all instances where the data system report has been edited, or where manual integration or quantitation has been performed, the HRGC/HRMS operator shall identify such edits or manual procedures by initialing and dating the changes made to the report, and shall include the integration scan page. In addition, a hardcopy printout of the chromatogram of the quantitation ion(s) displaying the manual integration shall be included in the raw data. This applies to all compounds listed in Exhibit C, labeled compounds, and internal standards.

2.5.3.4 Raw Quality Control Data

2.5.3.4.1 Blank Data shall be included in order by designated Sample Number assigned to the blank.

- FORM I-HR CDD-1, CDD-2, and CDD-3, if applicable.
- SICPs and a complete data system report including area summaries shall be submitted for each blank analyzed, and labeled as specified in Sections 2.5.3.1.4 and 2.5.3.1.5.

2.5.3.4.2 Laboratory Control Sample Data

- Tabulated results (FORM I-HR CDD-1 and CDD-2).
- SICPs and a complete data system report including area summaries labeled as specified in Sections 2.5.3.1.4 and 2.5.3.1.5.

2.5.4 CB Congeners Data

2.5.4.1 CB Congeners Quality Control (QC) Summary

2.5.4.1.1 Method Blank Summary (Form IV CB) - in order by EPA Sample Number assigned to the blanks.

2.5.4.1.2 Descriptor Switching Resolution Summary (Form V CB-1) - in order by EPA Sample Number assigned to the Level of Chlorination (LOC)/window-defining congeners mix.

A Descriptor Switching Resolution Summary must be completed for each 12-hour period. The RT for the first and last eluting congener at each level of chlorination are included on this form.

2.5.4.1.3 Ion Abundance Ratio Summary (Form V CB-2, CB-3) - in order by EPA Sample Number assigned to the LOC/window-defining congeners mix.

Ion Abundance Ratio Summaries for both native and labeled congeners must be completed for each 12-hour period.

2.5.4.2 CB Congeners Sample Data. Sample data shall be arranged in packets with the Toxic CB Congener Sample Data Summary Sheet (Form

I CB-1), CB Congener Toxicity Equivalence Summary (Form I CB-2), and CB Congener Sample Data Summary (Form I CB-3, CB-4) followed by the raw data for CB congener samples. These sample packets should then be placed in order of increasing EPA Sample Number, considering both letters and numbers.

2.5.4.2.1 Toxic Congener Results, Toxic CB Congener Sample Data Sheet (Form I CB-1). Tabulated results (identification and quantitation) of the specified target compounds (Exhibit C - CB Congeners) and recoveries of their associated labeled compounds shall be included. The validation and release of these results is authorized by a specific, signed statement in the SDG Narrative (Section 2.5.1). In the event that the Laboratory Manager cannot verify all data reported for each sample, the Laboratory Manager shall provide a detailed description of the problems associated with the sample in the SDG Narrative.

2.5.4.2.2 Toxicity Equivalence Summary (Form I CB-2). Tabulated adjusted concentrations for the target compounds based on the Toxicity Equivalence Factor (TEF). This form shall be included even if no target compounds are positively identified.

2.5.4.2.3 CB Congener Sample Data Summary (Form I CB-3, CB-4). Tabulated results for non-toxic congeners if this analysis is requested by the USEPA Region.

2.5.4.2.4 The SICP for each sample or sample extract, including dilutions and reanalyses.

SICPs must be presented so the two quantitation ions, and the relevant labeled compounds, are on one page. The internal standards can be presented on another page. The SICP must show the full time window scanned for each ion. The SICP for any toxic congener below the Signal-to-Noise (S/N) ratio of 10 or below the CRQL must be enlarged. Each SICP must include the following header information:

- EPA Sample Number;
- Date and time of analysis;
- Absolute RT (and scan number if available) of identified compounds;
- High Resolution Gas Chromatograph/High Resolution Mass Spectrometer (HRGC/HRMS) Instrument ID;
- Lab File ID; and
- Analyst ID.

2.5.4.2.5 If automated data system procedures are used for preliminary identification and/or quantitation of the target compounds, the complete data system report, including but not limited to quantitation reports and area summaries, shall be provided in all Sample Data Packages, in addition to the SICPs. The complete data system report shall include all of the information listed below. For laboratories which do not use the automated data system procedures, a laboratory "raw data

sheet" containing the following information shall be included in the Sample Data Package, in addition to the SICP:

- EPA Sample number;
- Date and time of analysis;
- Absolute RT (and scan number if available) of identified compounds;
- Ions used for quantitation with measured areas;
- Copy of area table from data system;
- On column concentration/amount including units;
- HRGC/HRMS Instrument ID;
- Lab File ID; and
- Analyst ID.

2.5.4.2.6 In all instances where the data system report has been edited, or where manual integration or quantitation has been performed, the HRGC/HRMS Operator shall identify the changes made to the report, by initialing and dating all handwritten changes, and shall include the integration scan range. In addition, a hardcopy printout of the chromatogram displaying the manual integration shall be included in the raw data.

2.5.4.2.7 Total Homologue Concentration Summary (Form II CB). Tabulated total homologue shall be completed for each sample and blank analyzed.

2.5.4.3 CB Congeners Standards Data

2.5.4.3.1 Initial Calibration of CB Congeners (Form VI CB-1, CB-2, CB-3, CB-4) - in order by instrument, if more than one instrument is used.

2.5.4.3.1.1 Perfluorokerosene (PFK) mass resolution for initial calibration shall be provided and labeled with EPA Sample Number, date and time, HRGC/HRMS Instrument ID, Lab File ID, and Analyst ID.

2.5.4.3.1.2 Standards, SICPs, and complete data system reports for the initial (five- or six-point) calibration for the toxic CB congeners will be labeled as stated in Sections 2.5.7.2.4 and 2.5.7.2.5.

2.5.4.3.1.3 If analysis of the non-toxic CB congeners is requested, the standards, SICPs, and data system reports for the single-point calibration shall be present.

2.5.4.3.1.4 When more than one initial calibration is performed, the data must be arranged in chronological order by instrument.

2.5.4.3.2 Continuing Calibration Verification Data (Form VII CB-1, CB-2) - in order by instrument, if more than one instrument is used.

2.5.4.3.2.1 PFK mass resolution for CCV shall be provided for each 12-hour period and labeled with EPA Sample Number, date and time, HRGC/HRMS Instrument ID, Lab File ID, and Analyst ID.

2.5.4.3.2.2 Standards, SICPs, and complete data system reports including area summaries for all CCVs will be labeled as specified in Sections 2.5.7.2.4 and 2.5.7.2.5.

2.5.4.3.2.3 If analysis of non-toxic CB congeners is requested, the SICPs and data system reports for the diluted 209-congener solution(s) shall be present.

2.5.4.3.2.4 When more than one CCV is performed, the data must be arranged in chronological order by instrument.

2.5.4.3.2.5 In all instances where the data system report has been edited, or where manual integration or quantitation has been performed, the HRGC/HRMS operator shall identify the changes made to the report, by initialing and dating all handwritten changes, and shall include the integration scan range. In addition, a hardcopy printout of the chromatogram of the quantitation ion(s) displaying the manual integration shall be included in the raw data. This applies to all target compounds listed in Exhibit C, labeled compounds, and internal standards.

2.5.4.3.2.6 Analytical Sequence (Form VIII CB) - for all GC columns and instruments, in chronological order by GC column and instrument.

2.5.4.4 CB Congeners Raw Quality Control (QC) Data

2.5.4.4.1 Blank data shall be included in order by EPA Sample Number assigned to the blank.

- Form I CB-1, CB-2, and CB-3, and CB-4.
- SICPs and complete data system reports including area summaries shall be submitted for each blank analyzed, and labeled as specified in Sections 2.5.7.2.4 and 2.5.7.2.5.

2.6 Complete Sample Delivery Group (SDG) File (CSF)

2.6.1 A CSF, including the original Sample Data Package, shall be delivered to the SMO concurrently with delivery of the Sample Data Package to the TOPO. The contents of the CSF shall be numbered according to the specifications described in Sections 3.6. The CSF shall contain all original documents specified in Sections 3 and 4, and in Form DC-2. No copies shall be placed in the CSF unless the originals were initially written in a bound notebook maintained by the laboratory, or the originals were previously submitted to the Government with another SDG in accordance with the requirements described in Exhibit F.

2.6.2 The CSF shall consist of the following original documents, in addition to the documents in the Sample Data Package:

- Original Sample Data Package;

- A completed and signed CDD/CDF/CB CSF Inventory Sheet (Form DC-2);

- All original shipping documents including, but not limited to, the following:

  - Chain of Custody Records/Traffic Reports;
  - Airbills (if an airbill is not received, include a hardcopy receipt from the shipping company or a printout of the shipping company's electronic tracking information); and
  - Sample tags (if present) sealed in plastic bags.

- All original receiving documents including, but not limited to, the following:

  - Form DC-1;
  - Other receiving forms or copies of receiving logbooks, and
  - Chain of Custody Record/Traffic Report Cover Sheet.

- All original laboratory records not already submitted in the Sample Data Package of sample transfer, preparation, and analysis including, but not limited to, the following documents:

  - Original preparation and analysis forms or copies of preparation and analysis logbook pages;
  - Internal sample and sample extract transfer Chain of Custody Records;
  - Screening records; and
  - All instrument output, including strip charts from screening activities.

- All other original SDG-specific documents in the possession of the Contractor, including, but not limited to, the following documents:

  - Telephone contact logs;
  - Copies of personal logbook pages;
  - All hand-written SDG-specific notes; and
  - Any other SDG-specific documents not covered by the above.

NOTE: All Case-related documentation may be used or admitted as evidence in subsequent legal proceedings. Any other SDG-specific documents generated after the CSF are sent to the TOPO, as well as copies that are altered in any fashion, are also deliverables to the Government (original to the TOPO and copies to SMO).

2.6.3 If the Contractor does submit SDG-specific documents to the Government after submission of the CSF, the documents shall be identified with unique accountable numbers, a revised Form DC-2 shall be submitted, and the unique accountable numbers and locations of the documents in the CSF shall be recorded in the "Other Records" section on the revised Form DC-2. Alternatively, the Contractor may number the newly submitted SDG-specific documents to the Government as a new CSF and submit a new Form DC-2. The revised Form DC-2 or new Form DC-2 should be submitted to the TOPO only.

2.7 Data in Computer-Readable Format

The Contractor shall provide a computer-readable copy of all sample data, as specified in Exhibit H, and delivered as specified in Section 1

of this exhibit. Computer-readable data deliverables shall be submitted on an IBM or IBM-compatible formatted 3.5-inch high-density 1.44 MB diskette(s), unless otherwise specified. When submitted, diskette(s) shall be packaged and shipped in such a way that the diskette(s) cannot be bent or folded and shall not be exposed to extreme heat/cold or any type of electromagnetic radiation. The diskette(s) shall be included in the same shipment as the hardcopy data, and, at a minimum, shall be enclosed in a diskette mailer. The data shall adhere to the specifications listed in Exhibit H.

2.8 High Resolution Gas Chromatography/High Resolution Mass Spectrometry (HRGC/HRMS) Tapes

2.8.1 The Contractor shall store all raw and processed HRGC/HRMS data on magnetic media in the appropriate instrument manufacturer's format. This media must include data for samples, LCSs, blanks, initial and continuing calibrations, as well as all laboratory-generated quantitation reports and SICPs required to generate the data package. The Contractor shall maintain a written reference logbook of tape files to designate Sample Number, calibration data, standards, and blanks. The logbook shall include designated Sample Numbers and Standard and Blank IDs, identified by Case, Task Order number, and SDG. The Contractor is required to retain the HRGC/HRMS tapes for three (3) years after submission of the reconciled complete data package. During that time, the Contractor shall submit tapes and associated logbook pages within 7 days after receipt of a written request from the TOPO or CO.

2.8.2 When submitting HRGC/HRMS tapes to the Government, the following materials shall be delivered in response to the request:

- All associated raw data files for samples, blanks, QC samples, LCSs, and initial and continuing calibration standards;
- All processed data files and quantitation output files associated with the raw data files described above;
- All associated identifications and calculation files used to generate the data submitted in the data package; and
- A copy of the Contractor's written reference logbook relating tape files to Sample Number, calibration data, standards, blanks, and LCSs. The logbook shall include Sample Numbers and laboratory file identifiers for all samples, blanks, and standards, identified by Case and SDG.

2.8.3 The laboratory shall also provide a statement attesting to the completeness of the HRGC/HRMS data tape submission, signed and dated by the Laboratory Manager and/or designee. This statement shall be part of a cover sheet that includes the following information relevant to the magnetic media submission:

- Laboratory name;
- Date of submission;
- Case number;
- Task Order number;

- SDG number;
- HRGC/HRMS make and model number;
- Software version;
- Disk drive type (e.g., CDC, PRIAM);
- File transfer method [e.g., Document Structure Definition (DSD), Document Type Definition (DTD), File Transfer Protocol (FTP), Aquarius]; and
- Names and telephone numbers of two laboratory contacts for further information regarding the submission.

2.9 Extracts

2.9.1 The Contractor shall preserve sample extracts in the dark at <-10° in bottles/vials with Teflon-lined septa. Extract bottles/vials shall be labeled with the designated Sample Number, Case number, SDG number, and Task Order number. A logbook of stored extracts, listing designated Sample Numbers and associated Case and SDG numbers, shall be maintained.

2.9.2 The Contractor is required to retain extracts for one (1) year following submission of reconciled complete data package. During that time, the Contractor shall submit extracts and associated logbook pages within 7 days following receipt of a written request from the TOPO or CO.

3.0 GENERAL FORM INSTRUCTIONS

3.1 Introduction

This section contains specific instructions for completion of all required chlorinated dibenzo-p-dioxins/chlorinated dibenzofurans (CDD/CDF)and chlorinated biphenyl (CB) congeners Data Reporting Forms.

3.2 General Information

3.2.1 The data reporting forms presented in Exhibit B, Section 4.0, have been designed in conjunction with the computer-readable data formats specified in Exhibit H, "Data Dictionary and Format for Data Deliverables in Computer-Readable Format". The specific length of each variable for computer-readable data transmission purposes is given in Exhibit H. Information entered on these forms shall **not** exceed the size of the field given on the form, including such laboratory generated items as "Lab Name" and "Lab Sample ID".

NOTE: On the hardcopy forms, the space provided for entries is greater in some instances than the length prescribed for the variable as written to the electronic deliverable (see Exhibit H). Greater space is provided on the hardcopy forms for visual clarity.

3.2.2 All characters which appear on the data reporting forms presented in Section 4 must be reproduced by the Contractor when submitting data, and the format of the forms submitted must be identical to that shown in the contract. No information may be added, deleted, or moved from its specified position without prior written approval of the Project Officer (PO). The names of the various fields and compounds (e.g., "Lab Code", "2378-TCDD") must appear as they do on the forms in the contract, including the options specified in the form (i.e., "Matrix: (Soil, Water, Ash, Tissue, Oil)" must appear, not just "Matrix"). For items appearing on the uncompleted forms (Section 4), the use of uppercase and lowercase letters is optional.

3.2.3 Alphabetic entries made onto the forms by the Contractor shall be in ALL UPPERCASE letters (e.g., "SOIL", not "Soil" or "soil"). If an entry does not fill the entire blank space provided on the form, null characters shall be used to remove the remaining underscores that comprise the blank line.

3.3 Header Information

Six pieces of information are common to the header section of each data reporting form. They are Lab Name, Contract, Lab Code, Case No., Task Order No., and SDG No. Except as noted below for Task Order No., this information must be entered on every form and must match on every form.

3.3.1 "Lab Name" will be the name chosen by the Contractor to identify the laboratory. It may not exceed 25 characters.

3.3.2 "Lab Code" is an alphanumeric abbreviation of up to six letters and numbers assigned by USEPA to identify the laboratory and aid in data processing. This lab code will be assigned by USEPA at the time a contract is awarded and shall not be modified by the Contractor, except at the direction of the Contracting Officer (CO). If a change of name or ownership occurs at the laboratory, the lab code will remain the same unless and until the Contractor is directed by the CO to use another USEPA-assigned lab code.

3.3.3 "Case No." is the assigned Case number associated with the sample and reported on the Chain of Custody Record/Traffic Report or sample shipping paperwork.

3.3.4 "Contract" is the number of the contract under which the analyses were performed.

3.3.5 "SDG No." is the designated Sample Number of the first sample received in the Sample Delivery Group (SDG). When several samples are received together in the first SDG shipment, the SDG number shall be the lowest Sample Number (considering both alpha and numeric designations) in the first group of samples received under the SDG.

3.3.6 The "TO No." is the Task Order number under which the analyses were performed.

3.3.7 The "Sample No." is the designated Sample Number provided by the Government and is the other information common to most of the forms. This number appears either in the upper right-hand corner of the form, or as the left column of a table summarizing data from a number of samples.

3.3.7.1 All samples, Laboratory Control Samples (LCSs), blanks, and standards shall be identified with a designated Sample Number. For field samples, the designated Sample Number is based on the unique identifying number given in the Chain of Custody Record/Traffic Report or sample shipping records for that sample.

3.3.7.2 In order to facilitate data assessment, the following suffixes must be used:

DXXXXX = Designated Sample Number
DXXXXXRE = Re-extracted and re-analyzed aliquot of sample "DXXXXX"
DXXXXXDL = Diluted analysis of sample "DXXXXX"

3.3.7.3 Form V-HR CDD-3 requires that all samples analyzed in a given 12-hour analytical sequence be listed, regardless of whether or not they are part of the SDG being reported, and regardless of whether or not they are Government samples. Therefore, use "ZZZZZZ" as the designated Sample Number for any sample analysis that is not associated with the SDG being reported.

3.3.7.4 For blanks and standards, the following identification scheme must be used as the "Sample No.":

- The CDD/CDF Method blanks shall be identified as DFBLK##;
- The CB Congner Method blanks shall be identified as CBLK##;
- Calibration standards shall be identified as CS1##, CS2##, CS3##, CS4##, and CS5##, and shall correspond to the calibration solutions identified in Exhibit D;
- The Window Defining Mixture (WDM) shall be identified as WDM##;
- The Isomer Specificity Check (ISC) shall be identified as ISC##;
- If combined, the WDM and ISC shall be identified as CPS##;

- The LCS shall be identified as DLCS##; and

- The perfluorokerosene (PFK) mass resolution check shall be identified as PFK##.

3.3.7.5 "Sample No." must be unique within an SDG. Therefore, the Contractor must replace the two-character "##" terminator of the identifier with one or two characters or numbers, or a combination of both, to create a unique Sample Number for each blank and standard within the SDG. For example, possible identifiers for method blanks would be DFBLK01, DFBLK02, DFBLKA1, DFBLKB2, DFBLKAB, etc.

3.3.8 Other Common Fields

Other pieces of information are common to many of the data reporting forms. These include "Matrix", "Lab Sample ID", "Lab File ID", "Instrument ID", and "GC Column".

3.3.8.1 For "Matrix", enter "SOIL" for a soil/sediment/sludge sample, "WATER" for an aqueous sample, "TISSUE" for tissue, "OIL" for oil and oil matrix, and "ASH" for fly ash samples.

3.3.8.2 "Lab Sample ID" is an optional laboratory generated internal identifier. Up to 12 alphanumeric characters may be reported here. If the Contractor does not have a Lab Sample ID, this field may be left blank. However, if this identifier is used on any of the forms or accompanying hardcopy data deliverables, it must be reported on all the appropriate forms.

3.3.8.3 "Lab File ID" is the laboratory generated name of the High Resolution Gas Chromatography/High Resolution Mass Spectrometry (HRGC/HRMS) data system file containing information pertaining to a particular analysis. Up to 14 alphanumeric characters may be used here.

3.3.8.4 "Instrument ID" is common to many of the forms, particularly those containing calibration data. The identifier used by the laboratory must include some indication of the manufacturer and/or model of the instrument, and contain additional characters or numbers that differentiate between all instruments of the same type in the laboratory. The instrument identifier must be consistent on all forms within the SDG.

3.3.8.5 "GC Column" and "ID (mm)" are common to various other forms. These two fields are to be used to identify the stationary phase of the GC column, and the internal diameter of the GC column in millimeters (mm).

3.3.9 Rounding Rule

For rounding off numbers to the appropriate level of precision, observe the following common rules. If the figure following those to be retained is less than 5, drop it (round down). If the figure is greater than or equal to 5, drop it and increase the last digit to be retained by 1 (round up).

3.4 Chlorinated Dibenzo-P-Dioxin/Dibenzofuran (CDD/CDF) Data Reporting Forms

3.4.1 CDD/CDF Sample Data Summary High Resolution [Form I-HR CDD-1]

3.4.1.1 This form is used for tabulating and reporting the sample analysis results for target analytes in samples, blanks, and LCSs. It is related to Form I-HR CDD-2, and for each sample for which there is a Form I-HR CDD-1, there must be a corresponding Form I-HR CDD-2. In addition, a Form I-HR CDD-3 may be associated.

3.4.1.2 Complete all header information according to the instructions in Section 3.3 and as follows:

3.4.1.2.1 Enter the "Matrix" of the sample being analyzed. The designation of matrix must reflect which one of the matrix-specific extraction procedures in Exhibit D was used for extraction of the sample.

3.4.1.2.2 For "Sample wt/vol", enter the number of grams (for soil, tissue, oil, and ash) or milliliters (for water) of sample used in the first blank line, and the units, either "G" or "ML", in the second blank.

3.4.1.2.3 For water samples, indicate the extraction procedure used by entering "SEPF" for Separatory Funnel Extraction or "SPE" for Solid Phase Extraction in the field labeled "Water Sample Prep".

3.4.1.2.4 Enter the actual volume of the <u>most</u> concentrated sample extract, in microliters, under "Concentrated Extract Volume". This volume will typically be 20 µL after the addition of the internal standard solution.

3.4.1.2.5 Enter "GC Column", "ID (mm)", "Lab Sample ID", and "Lab File ID", as described in Section 3.3.

3.4.1.2.6 "Date Received" is the date of sample receipt at the laboratory, as noted on the Chain of Custody Record/Traffic Report [i.e., the Validated Time of Sample Receipt (VTSR)] for that sample. It must be entered as MM/DD/YYYY.

3.4.1.2.7 "Date Extracted" and "Date Analyzed" must also be entered as MM/DD/YYYY.

3.4.1.2.8 "Date Analyzed" must be the date of the analysis for which the results are reported on Form I-HR. (If the sample requires a second column confirmation and is reported on Form I-HR CDD-3, the "Date Analyzed" on Form I-HR CDD-3 must be the date of the second analysis, while the date on Form I-HR CDD-1 and CDD-2 shall be the date of the first analysis.)

3.4.1.2.9 If the sample has been diluted for analysis, enter the "Dilution Factor" as a single number, <u>not</u> a fraction. For example, enter "100.0" for a 1 to 100 dilution of the extract. Enter "0.1" for a concentration of 10 to 1. If the sample was not diluted, enter "1.0".

3.4.1.2.10 Enter the volume of the sample extract injected into the HRGC in the "Injection Volume" field. Report this volume in µL.

3.4.1.2.11 Enter the value for Percent Solid (%S) as described in Exhibit D for soil/sediment/sludge samples in the "% Solid/Lipids" field. For tissue samples, enter the value for Percent Lipids (% Lipids), as determined in Exhibit D, in this field. For all other matrices, leave this field blank.

3.4.1.2.12 The appropriate concentration units, "PG/L" for water samples, or "NG/KG" for all other matrices, must be entered in the field for "CONCENTRATION UNITS".

3.4.1.3 For each analyte detected in a sample, enter the Absolute Retention Time (RT) of the detected peak under "PEAK RT". Enter the RT in minutes and decimal minutes, not seconds or minutes and seconds. The RT must be entered, even if the peak did not meet all of the identification criteria in Exhibit D.

3.4.1.4 Enter the ion abundance ratio for the two m/z's (listed under "SELECTED IONS") in the column labeled "ION RATIO". If the ion abundance ratio falls outside the acceptance limits listed in Exhibit D, place an asterisk (*) in the column under the number (#) symbol. For target analytes that meet all the identification criteria in Exhibit D, the Contractor shall report the concentrations detected as uncorrected for blank contaminants in the column labeled "CONCENTRATION". Report all results to three significant figures.

3.4.1.5 Under the column labeled "Q" for qualifier, flag each result with the specific data reporting qualifiers listed below. The Contractor is encouraged to use additional flags as needed, but the definition of such flags must be explicit, must not contradict the qualifiers listed below, and must be included in the accompanying SDG Narrative.

3.4.1.6 For reporting results, the following contract-specific qualifiers are to be used. The seven qualifiers listed below are not subject to modification by the laboratory. Up to five qualifiers may be reported on Form I for each analyte. The seven defined qualifiers to be used are as follows:

3.4.1.6.1 U - Indicates compound was analyzed for, but not detected. The "CONCENTRATION" column is left blank in this instance, and an Estimated Detection Limit (EDL) must be calculated based on the signal-to-noise (S/N) ratio, as described in Exhibit D. This calculation takes into account the sample weight/volume extracted, the volume of the most concentrated extract, the injection volume, and dilution of the most concentrated extract prior to analysis.

3.4.1.6.2 J - Indicates an estimated value. This flag is used when the mass spectral data indicate the presence of an analyte meeting all the identification criteria in Exhibit D, but the result is less than the Contract Required Quantitation Limit (CRQL), as listed in Exhibit C, but greater than zero.

3.4.1.6.3 B - This flag is used when the analyte is found in the associated blank, as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

3.4.1.6.4 E - This flag identifies analytes whose concentrations exceed the calibration range of the HRGC/HRMS instrument for that specific analysis. If one or more compounds have a response greater than fullscale, except as noted in Exhibit D, a smaller sample size must be extracted and analyzed according to the specifications in Exhibit D. All such compounds with a response greater than full scale should have the concentration flagged "E" on the Form I for the original analysis. If the dilution causes any compounds identified in the first analysis to be below the calibration range in the second analysis, the results of both analyses shall be reported on separate copies of Form I. The Form I for the diluted sample shall have the "DL" suffix appended to the designated Sample Number.

3.4.1.6.5 D - This flag indicates all compounds identified in an analysis at a secondary dilution factor. If a smaller sample size is analyzed, as in the "E" flag above, the "DL" suffix is appended to the designated Sample Number on the Form I for the diluted sample, and all concentration values reported on that Form I are flagged with the "D" flag. This flag alerts data users that any discrepancies between the concentrations reported may be due to dilution of the sample extract.

3.4.1.6.6 H - This flag indicates that the analyte in question was quantitated using peak heights rather than peak areas for both the analyte and its internal standard (see Exhibit D, Section 11).

3.4.1.6.7 X - Other specific flags may be required to properly define the results. If used, they must be fully described, and such description must be attached to the Sample Data Package and the SDG Narrative. Begin using "X". If more than one flag is needed, use "Y" and "Z" as needed. The laboratory-defined flags are limited to the letters "X", "Y", and "Z".

3.4.1.7 The combination of flags "BU" or "UB" is expressly prohibited. Blank contaminants are flagged "B" only when they are detected in the sample associated with the blank.

3.4.1.8 If a peak detected in the sample meets all of the identification criteria except the ion abundance ratio, flag the ion ratio as indicated above, and report the Estimated Maximum Possible Concentration (EMPC), as calculated in Exhibit D under the "EMPC/EDL" column. Do not report the value of the EMPC under the column labeled "CONCENTRATION", as that column is only for analytes meeting all the identification criteria.

3.4.1.9 If an analyte was not detected in the sample, enter "U" in the qualifier column, as described above, and report the EDL as calculated in Exhibit D under the "EMPC/EDL" column. Do not report the value of the EDL if there is an entry under "CONCENTRATION". The presence of the "U" alerts the data user that the reported value is an EDL, otherwise it is assumed to be an EMPC. EMPC values must be reported with Peak Retention Times and Ion Ratios with a flag in the "Q" column.

3.4.1.10 The bottom portion of Form I-HR CDD-1 contains the fields for reporting the recoveries of the labeled compounds and the cleanup standard. The recoveries of these standards are crucial in evaluating the effectiveness of the isotope dilution method. For

each labeled compound and the cleanup standard, enter the absolute RT of the standard in the sample in minutes and decimal minutes. Report the ion abundance ratio under the "ION RATIO" column. Flag any ion ratios that fall outside the ion ratio limits listed on the form by placing an asterisk (*) in the column under the number (#) symbol. There is no ion abundance ratio for the cleanup standard, as only one ion is monitored. Report the Percent Recovery (%R) of the labeled compounds and the cleanup standard, calculated according to Exhibit D, under the "% REC" column. The Quality Control (QC) limits for recovery are listed on the form. Flag any recovery outside those limits by placing an asterisk (*) under the number (#) symbol in the recovery column. Requirements for re-analysis of samples due to poor recoveries are provided in Exhibit D.

3.4.2 CDD/CDF Toxicity Equivalence Summary High Resolution [Form I-HR CDD-2]

This page of Form I-HR reports the results of the toxicity equivalence calculations for each sample analyzed. The concentration of each of the 2,3,7,8-substituted CDD and CDF isomers is multiplied by a Toxicity Equivalence Factor (TEF) to arrive at an equivalent toxicity concentration of 2,3,7,8-TCDD.

3.4.2.1 Complete the header information as specified in Section 3.3. The header of Form I-HR CDD-2 must match the header of Form I-HR CDD-1 for the same sample.

3.4.2.2 For each 2,3,7,8-substituted isomer positively identified in the sample, enter the concentration found in the column labeled "CONCENTRATION". If an isomer was not detected (e.g., flagged "U" on Form I CDD-1) for the purposes of this calculation, enter 0.0 (zero) (EDLs and EMPCs are entered as 0.0) as the concentration. Multiply each concentration times the TEF listed on the form for that isomer, and enter the product of the two in the column labeled "TEF-ADJUSTED CONCENTRATION". Add all 17 TEF-adjusted concentrations together, including any zeros for non-detected, and enter the total on the line at the bottom of the form.

3.4.3 CDF Second Column Confirmation High Resolution [Form I-HR CDD-3]

This page of Form I reports the results of all second column confirmation analyses performed. The requirements for second column confirmation are discussed in Exhibit D. Each time a second column confirmation is performed, the results are reported on Form I-HR CDD-3. Second column confirmation is not required for LCSs, therefore Form I-HR CDD-3 is not submitted for LCSs.

3.4.3.1 Complete the header information as specified in Section 3.3, except note that the field for "GC Column" must correspond to the second column confirmation analysis (i.e., it must not match that in the header of Form I-HR CDD-1 or CDD-2). Other fields such as "Date Analyzed", "Dilution Factor", and "Lab File ID" may also differ and must correspond to the second column confirmation analysis.

3.4.3.2 Complete the information in the lower portion of the form in a fashion similar to that for Form I-HR CDD-1, but enter the results of the second column confirmation.

3.4.3.3 Enter data on the recovery of the labeled compound and cleanup standard from the second column confirmation analysis in a fashion similar to that for the original analysis.

3.4.4 CDD/CDF Total Homologue Concentration Summary High Resolution [Form II-HR CDD]

This form reports the total concentration of all CDD/CDF isomers in a given homologue that are detected in the sample, including those isomers that do not represent the 2,3,7,8-substituted isomers of greatest toxicological concern. Because there are many isomers in each homologue, it is necessary to indicate the number of peaks that represent isomers within the congener. Enter the number of peaks detected in each congener under "PEAKS". For instance, if three PeCDD peaks are detected and summed together, enter "3" under "PEAKS".

3.4.4.1 Enter the total concentration of the homologue, as calculated in Exhibit D, under "CONCENTRATION". Enter qualifiers under the "Q" column, as described in Section 3.4.1.6. If no isomers in a homologue were detected, enter "U" as the qualifier, and enter the lowest EDL of any of the 2,3,7,8-substituted isomers under the "EMPC/EDL" column.

3.4.4.2 If any of the peaks in a congener meet all the identification criteria except the ion abundance ratio, report the total concentration as an EMPC under the "EMPC/EDL" column.

3.4.5 CDD/CDF Lab Control Sample Summary High Resolution [Form III-HR CDD]

This page of Form III reports the results of the LCS analysis.

3.4.5.1 Complete the header information as in Section 3.3. Enter the designated Sample Number in the box at the top of the form. Similarly, the Lab Sample ID and Lab File ID must refer to the LCS.

3.4.5.2 Under the "SPIKE ADDED" column, enter the calculated concentration of each of the 17 analytes in the LCS in pg/L or ng/Kg (according to the matrix) that results from dividing each spike compound amount added by the aliquot weight or volume. In the column labeled "AMOUNT RECOVERED", enter the concentration (or EMPC) of each analyte detected in the LCS. The concentration units must be those indicated at the top of the form and be appropriate to the sample matrix listed in the header. Calculate the recovery of each spiked analyte as described in Exhibit D, and enter this value to the nearest whole percentage point in the column labeled "PERCENT RECOVERY". Flag any recoveries outside the QC limits listed on the form by placing an asterisk (*) in the column under the number (#) symbol.

3.4.5.3 In addition to Form III CDD, a copy of Form I-HR CDD-1 must also be completed for the LCS analysis, following the procedures described above.

3.4.6 CDD/CDF Method Blank Summary High Resolution [Form IV-HR CDD]

This form summarizes the samples associated with each method blank analysis. A copy of Form IV-HR is required for each blank.

3.4.6.1 Complete the header information as described in Section 3.3. The designated Sample Number entered in the box at the top of the form shall be the number assigned to the method blank. The matrix entered on this form refers to the matrix of the associated samples, as one blank is required each time that samples of a similar matrix are extracted together. Therefore, samples of differing matrices cannot be mixed together on a single Form IV-HR.

3.4.6.2 Summarize the samples associated with a given method blank in the box in the lower portion of the form, entering the designated Sample Number, Lab Sample ID, Lab File ID, and date of analysis of each sample. Include LCSs as well.

3.4.7 CDD/CDF Window Defining Mix (WDM) Summary High Resolution [Form V-HR CDD-1]

This page of Form V reports the results of the analysis of the WDM that precedes each calibration verification on each GC column and instrument used for analysis. The analysis of this mixture is used to document the retention time window for the CDD/CDF congeners.

3.4.7.1 Complete the header information as described in Section 3.3, entering the designated Sample Number of the WDM injection in the box at the top of the form. The header information must correspond to the analysis of the WDM.

3.4.7.2 In the box in the lower portion of the form, enter the Absolute RTs of the first and last eluting isomers in each congener. Enter the retention times in minutes and decimal minutes, not minutes and seconds, nor seconds.

NOTE: As there is only one possible octachlorinated dioxin and furan, the retention times of these analytes are not contained in the WDM, and are not reported here.

3.4.8 CDD/CDF Chromatographic Resolution Summary High Resolution [Form V-HR CDD-2]

This page of Form V reports the chromatographic resolution of selected analytes in one of two solutions, depending on the GC column. The chromatographic resolution of these analytes is crucial to evaluating the results for the CDDs/CDFs reported in the samples. This evaluation is made every 12 hours during which samples or standards are analyzed. The Form V-HR CDD-2 shall be submitted for each column used.

3.4.8.1 For the DB-5 (or equivalent) column and for the DB-225 (or equivalent) column, the chromatographic resolution is judged from the analysis of the isomer specificity check that precedes the analysis of the calibration verification (see Exhibit D).

3.4.8.2 Complete one copy of Form V-HR CDD-2 for each analysis of the isomer specificity check on each GC column. Complete the header information, as described in Section 3.3, entering the designated

Sample Number of the isomer specificity check in the box at the top of the form. Enter the date and time of analysis of the standard in the header.

3.4.8.3 Calculate the chromatographic resolution for the GC column identified in the header according to the procedures in Exhibit D. For the DB-5 (or equivalent) column, enter only the results from the isomer specificity check analysis. For the DB-225 (or equivalent) column, enter only the results from the isomer specificity check analysis.

3.4.9 CDD/CDF Analytical Sequence Summary High Resolution [Form V-HR CDD-3]

This page of Form V reports the sequence of analyses, including the analysis of the WDM, Isomer Specificity Check, the calibration standards, blanks, samples, and LCSs.

3.4.9.1 Complete the header information as described in Section 3.3. Enter the inclusive dates and times of the analyses of the first and last initial calibration standards in the fields for "Init. Calib. Date(s)" and "Init. Calib. Times". Dates must be in the format MM/DD/YYYY, and all times are expressed as HHMM, in military time (i.e., a 24-hour clock).

3.4.9.2 In the box in the lower portion of the form, enter the designated Sample Number, Lab Sample ID, Lab File ID, and date and time of analysis of all standards, samples, blanks, LCSs, dilutions, re-analyses, etc. All analyses must be listed on Form V in chronological order. If analysis is not associated with the SDG being reported, enter the designated Sample Number as "ZZZZZZ", as described in Section 3.3.

3.4.9.3 If the analytical sequence includes the analysis of the initial calibration standards, these standards and the WDM must be included on that copy of Form V, identified by the designated Sample Numbers described in Section 3.3. A copy of the analytical sequence that includes these initial calibration standards and the WDM must be submitted with each data package to which the initial calibration applies, but the Case number and Task Order number must match those of each data package in which these initial calibration data are reported.

3.4.10 CDD/CDF Initial Calibration Response Factor Summary High Resolution [Form VI-HR CDD-1]

This form summarizes the Relative Response (RR) or Relative Response Factors (RRF) for each target analyte, labeled compound, and cleanup standard calculated from the initial calibration. Complete the header information as described in Section 3.3. Enter the inclusive initial calibration date(s) and times, as described for Form V-HR CDD-3. One copy of Form VI-HR CDD-1 must be completed for each initial calibration and for each instrument and GC column used for analysis of samples, and must be accompanied by a corresponding Form VI-HR CDD-2.

3.4.10.1 Enter the RR and RRF determined from the analysis of each of the calibration standards (CS1 through CS5). Enter RR/RRF values to three decimal places. Calculate the mean RR/RRF, as described in Exhibit D, and enter the value in the "MEAN RR/RRF" column. Calculate the Percent Relative Standard Deviation (%RSD), and

enter under "%RSD". Note that as the internal standards are used to determine the RRFs of the labeled compounds, no RRF values can be calculated for the internal standards, and therefore, they do not appear on Form VI CDD-1.

3.4.11 CDD/CDF Initial Calibration Ion Abundance Ratio Summary High Resolution [Form VI-HR CDD-2]

This page of Form VI reports the ion abundance ratios for each of the initial calibration standards. Because the ratio of the abundances of the two ions monitored for each analyte is crucial to the identification of these analytes, the ion abundance ratios must meet the QC limits.

3.4.11.1 For each native analyte, labeled compound, and internal standard, the two ions monitored for each analyte are listed in the column labeled "SELECTED IONS". Calculate the ratio of the abundances of these two ions and enter the ion abundance ratio of each analyte in each of the initial calibration standards to two decimal places.

3.4.11.2 Compare the ion abundance ratios to the QC limits shown on the form, and flag any analyte which did not meet these limits in one or more of the standards.

NOTE: The cleanup standard does not appear on Form VI-HR CDD-2, as only one ion is monitored for this analyte. Therefore, no ion abundance ratio can be calculated.

3.4.11.3 One copy of Form VI-HR CDD-2 must be completed for each initial calibration, for each instrument and GC column used for analysis of samples, and must accompany a corresponding copy of Form VI CDD-1.

3.4.12 CDD/CDF Continuing Calibration Summary High Resolution [Form VII-HR CDD-1]

This page of Form VII summarizes the results of the continuing calibration that must occur in each 12-hour analytical sequence. The form is used to report the RR/RRF values and ion abundance ratios of each analyte in the CS3 standard, and to compare these values to the initial calibration data reported on Form VI-HR CDD-1.

3.4.12.1 One copy of Form VII-HR CDD-1 must be completed for each continuing calibration performed, and must be accompanied by a corresponding copy of Form VII-HR CDD-2.

3.4.12.2 Complete the header information as described in Section 3.3. The date and time of analysis and Lab File ID in the header must correspond to the analysis of the CS3 standard. Enter the dates and times of the associated initial calibration in the fields for "Init. Calib. Date(s)" and "Init. Calib. Times", respectively. If the calendar date changed during the initial calibration, enter the inclusive dates of the first and last standards in the associated initial calibration in the fields for "Init. Calib. Date(s)".

3.4.12.3 For each of the native analytes, labeled compounds, and the cleanup standard in the CS3 Standard, enter the RR or RRF determined from the analysis of the continuing calibration

standard in the column labeled "RR/RRF". Enter the mean RR/RRF for each analyte from the associated initial calibration, in the column labeled "MEAN RR/RRF". The values reported in this column must match those reported on the Form VI for the associated initial calibration. Calculate the Percent Difference (%D) between the RR/RRF and the mean RR/RRF for each analyte, and report under "%D". If the Percent Difference exceeds the quality control limits specified in Exhibit D, flag that analyte by placing an asterisk (*) in the "%D FLAG" column. Report the ion abundance ratio of each analyte under the "ION RATIO" column. Flag any ion ratio that falls outside the QC limits shown on the form by placing an asterisk (*) in the "ION RATIO FLAG" column.

NOTE: Because only one ion is monitored for the cleanup standard, no ion ratio is determined for this analyte. For the internal standards, RRFs are not calculated or reported on Form VII-HR CDD-1, but the ion abundance ratios for these standards must be reported on Form VII-HR CDD-1.

3.4.13 CDD/CDF Continuing Calibration Retention Time Summary High Resolution [Form VII-HR CDD-2]

This page of Form VII summarizes the RT and Relative Response Times (RRTs) of the analytes in the continuing calibration standards that must be analyzed in each 12-hour analytical sequence. RTs and RRTs are critical to the identification of CDDs/CDFs by this method. One copy of Form VII-HR CDD-2 must be completed for each continuing calibration performed and must be accompanied by a corresponding copy of Form VII-HR CDD-1.

3.4.13.1 Complete the header information as described in Section 3.3. The date and time of analysis and Lab File ID in the header must correspond to the analysis of the CS3 standard. Enter the date of the associated initial calibration in the field for "Init. Calib. Date(s)". If the calendar date changed during the initial calibration, enter the inclusive dates of the analyses of the first and last standards in the associated initial calibration in the fields for "Init. Calib. Date(s)".

3.4.13.2 For each of the native and labeled analytes, enter the RRT and RT of the analyte in the calibration standard. RRT is calculated as the RT of the native analyte divided by the RT of the appropriate labeled compound, and the RT of the labeled compound divided by the RT of the appropriate internal standard. For the internal standards, report only the RTs. Enter all RTs in minutes and decimal minutes. RRTs are reported to two decimal places.

3.5 CB Congener Data Reporting Forms

3.5.1 Toxic CB Cogener Sample Data Summary (Form 1 CB-1)

3.5.1.1 Purpose

This form is used for tabulating and reporting sample analysis, including dilutions, reanalysis, blank, LCS, and requested Matrix Spike and Matrix Spike Duplicate results for target compounds.

3.5.1.2 Instructions

Complete the header information according to the instructions in Section 3.3. Complete the remainder of the form using the following instructions.

3.5.1.2 For soil and sediment samples analyzed for CB congeners, enter the values for the Percent Moisture determined during the analysis in the "% Moisture" field on Form I CB-1. In the "Decanted: (Y/N)" field, enter Y if the sample had standing water above the soil or sediment that was decanted, or N if no water was decanted off the surface of the sample. For water samples analyzed for CB congeners, enter the Percent Solids on Form I CB-1. For tissue samples analyzed for CB congeners, enter the Percent Lipids on Form I CB-1. Report Percent Moisture, Percent Solids, and Percent Lipids (decanted or not decanted) to the nearest whole percentage point (e.g., 5%, not 5.3%). For water samples, method blanks, and instrument blanks, leave these fields blank on Form I.

3.5.1.3 Enter the method of extraction in the "Extraction: (Type)" field on Form I CB-1, as SEPF for separatory funnel, CONT for continuous liquid-liquid extraction without hydrophobic membrane, CONH for continuous liquid-liquid extraction with hydrophobic membrane, SPE for Solid Phase Extraction, SONC for sonication (soils only), SOXH for Soxhlet Extraction (soils or tissues), SDS for Soxhlet-Dean Stark extraction (CB congeners soils only), or PFEX for Pressurized Fluid Extraction (soils only).

3.5.1.4 Enter the cleanup method used [Acid, Base, GPC, Silica, Florisil, HPLC, carbon, or Anthropogenic Isolation Column (AIC] in the "Cleanup" field.

3.5.1.5 Enter the date of sample receipt at the laboratory, as Noted on the TR/Chain of Custody Record [i.e., the Validated Time of Sample Receipt (VTSR)], in the "Date Received" field. The date shall be entered as MM/DD/YYYY.

3.5.1.6 Complete the "Date Extracted" and "Date Analyzed" fields in the same format (MM/DD/YYYY). When continuous liquid-liquid extraction procedures are used for water samples, enter the date that the procedure was **started** in the "Date Extracted" field. If separatory funnel, SPE, sonication, soxhlet, SDS, or pressurized fluid procedures are used, enter the date that the procedure was **completed** in the "Date Extracted" field. The date of sample receipt will be compared with the extraction and analysis dates of each sample to ensure that contract holding times were not exceeded.

3.5.1.7 Enter the actual volume of the **most** concentrated sample extract, in µL, in the "Concentrated Extract Volume" field on Form I CB-1. If a dilution of the sample extract is made in a subsequent analysis, this volume will remain the same, but the Dilution Factor (DF) will change. For CB congeners, this volume will typically be 20 µL.

3.5.1.8 Enter the volume of the sample extract injected into the GC in the "Injection Volume" field on Form I CB-1. Report this volume in µL to one decimal place (e.g., 1.0 µL).

3.5.1.9 If a sample or sample extract has been diluted for analysis, enter the DF value to one decimal place in the "Dilution Factor" field (i.e., a DF of 1 will be reported as 1.0; DF of 10 will be reported as 10.0).

3.5.1.10 For positively identified target compounds, the Contractor shall report the concentrations as **uncorrected** for blank contaminants.

3.5.1.11 Report all analytical results to two significant figures if the value is less than 10. For pesticide results, report both the sample concentration (µg/L, µg/kg) and the on column concentration (ng/µl) of the higher of the two analyses.

3.5.1.12 Enter the appropriate concentration units, µg/L, µg/Kg, pg/L, or ng/kg.

3.5.1.13 For reporting results, the following contract-specific qualifiers are to be used. The seven qualifiers listed below <u>are</u> <u>not</u> subject to modification by the laboratory. Up to five qualifiers may be reported on Form I for each analyte. The seven defined qualifiers to be used are as follows:

3.5.1.13.1 U - Indicates compound was analyzed for, but not detected. The "CONCENTRATION" column is left blank in this instance, and an Estimated Detection Limit (EDL) must be calculated based on the signal-to-noise (S/N) ratio, as described in Exhibit D. This calculation takes into account the sample weight/volume extracted, the volume of the most concentrated extract, the injection volume, and dilution of the most concentrated extract prior to analysis.

3.5.1.13.2 J - Indicates an estimated value. This flag is used when the mass spectral data indicate the presence of an analyte meeting all the identification criteria in Exhibit D, but the result is less than the Contract Required Quantitation Limit (CRQL), as listed in Exhibit C, but greater than zero.

3.5.1.13.3 B - This flag is used when the analyte is found in the associated blank, as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

3.5.1.13.4 E - This flag identifies analytes whose concentrations exceed the calibration range of the HRGC/HRMS instrument for that specific analysis. If one or more compounds have a response greater than fullscale, except as noted in Exhibit D, a smaller sample size must be extracted and analyzed according to the specifications in Exhibit D. All such compounds with a response greater than full scale should have the concentration flagged "E" on the Form I for the original analysis. If the dilution causes any compounds identified in the first analysis to be below the calibration range in the second analysis, the results of both analyses shall be reported on separate copies of Form I. The Form I for the diluted sample shall have the "DL" suffix appended to the designated Sample Number.

3.5.1.13.5 D - This flag indicates all compounds identified in an analysis at a secondary dilution factor. If a smaller sample size is

analyzed, as in the "E" flag above, the "DL" suffix is appended to the designated Sample Number on the Form I for the diluted sample, and all concentration values reported on that Form I are flagged with the "D" flag. This flag alerts data users that any discrepancies between the concentrations reported may be due to dilution of the sample extract.

3.5.1.13.6 H - This flag indicates that the analyte in question was quantitated using peak heights rather than peak areas for both the analyte and its internal standard (see Exhibit D, Section 11).

3.5.1.13.7 X - Other specific flags may be required to properly define the results. If used, they must be fully described, and such description must be attached to the Sample Data Package and the SDG Narrative. Begin using "X". If more than one flag is needed, use "Y" and "Z" as needed. The laboratory-defined flags are limited to the letters "X", "Y", and "Z".

3.5.2 Toxic Congener Toxicity Equivalence Summary (Form I CB-2)

3.5.2.1 Purpose

This form is used to report the Toxicity Equivalence Factor (TEF)-adjusted concentrations and the Total TEF-adjusted concentration for the toxic congeners for samples. The contractor shall submit a Form I CB-2 for each sample.

3.5.2.2 Instructions

Complete the header information according to the instructions in Section 3.3. Complete the remainder of the form using the following instructions:

3.5.2.2.1 For each toxic congener result greater than the CRQL, enter the concentration in the "Concentration" column. Otherwise, leave the field blank.

3.5.2.2.2 For each toxic congener result greater than the CRQL, calculate the TEF-adjusted concentration by multiplying the result by the TEF and enter the calculated value in the "TEF-Adjusted Concentration" column. Otherwise leave the field blank.

3.5.2.2.3 Calculate the Total TEF-adjusted concentration and enter the calculated total in the "Total" field.

3.5.3 CB Congener Sample Data Summary (Form I CB-3)

3.5.3.1 Purpose

This form is used for tabulating and reporting sample analysis, including dilutions, reanalyses, and blanks, for the non-toxic CB congeners when analysis for these congeners is requested by a USEPA Region.

3.5.3.2 Instructions

Complete the header information according to the instructions in Sections 3.3. Complete the remainder of the fields in the header

according to the instructions in Section 3.5.1. Complete the remainder of the form using the following instructions:

3.5.3.2.1 Under the column labeled "Analyte", enter the IUPAC congener ID number as described in Exhibit D - CB Congeners.

3.5.3.2.2 Under the column labeled "Concentration", report the results to two significant figures.

3.5.3.2.3 Under the column labeled "Q", flag each result with the specific data reporting qualifiers described in Section 3.5.1.13.

3.5.4 Total Homologue Concentration Summary (Form II CB)

3.5.4.1 Purpose

This form is used to report the concentration of the mono- through nona-chloro biphenyl homologues for each sample.

3.5.4.2 Instructions

Complete the header information according to the instructions in Sections 3.3 and 3.5.1. Complete the remainder of the form using the following instructions.

3.5.4.2.1 Under the column labeled "Peaks", enter the number of congener peaks detected for each homologue. If no peaks are detected leave the field blank.

3.5.4.2.2 Under the column labeled "Concentration", report the total concentration for the homologue to two significant figures. If no concentration is found, leave the field blank.

3.5.4.2.3 Under the column labeled "Q", flag each total homologue result with the specific data reporting qualifiers described in Section 3.5.1.13.

3.5.5 Method Blank Summary (Form IV CB)

3.5.5.1 Purpose

This form summarizes the samples associated with each method blank analysis. The Contractor shall submit the appropriate Form IV for each blank.

3.5.5.2 Instructions

Complete the header information according to the instructions in Section 3.3. The EPA Sample Number entered in the upper right-hand corner shall be the same number entered on Form I for the blank. Complete the remainder of the form using the following instructions.

3.5.5.2.1 Complete the following fields: "Instrument ID", "Date Analyzed", and "Time Analyzed". Dates shall be entered as MM/DD/YYYY. The time shall be reported in military time.

3.5.5.2.3 Identify the GC column and internal diameter in the appropriate fields.

3.5.5.2.4 For CB congener blanks, enter the method of extraction as CONH for continuous liquid-liquid extraction with hydrophobic membrane, CONT for continuous liquid-liquid extraction without hydrophobic membrane, SONC for sonication, SOXH for Soxhlet extraction, or PFEX for pressurized fluid extraction on Form IV CB. For CB congener blanks, separatory funnel extraction shall be entered as SEPF. For CB congener blanks, Solid Phase Extraction shall be entered as SPE and Soxhlet-Dean Stark extraction (tissue only) shall be entered as SDS.

3.5.5.2.5 For CB congener method blanks, enter the date of extraction of the blank on Form IV CB.

3.5.5.2.6 Enter the reference matrix used to prepare the method blank in the "Matrix" field.

3.5.5.2.7 CB Congeners method blanks require the identical cleanup methods as the associated samples. If any cleanup methods are employed, enter them in the “Cleanup Type” field.

3.5.5.2.8 As appropriate, summarize the samples including LCSs, requested MS/MSDs, storage blanks, and volatile instrument blanks, associated with a given method blank in the table, entering the EPA Sample Number and Laboratory Sample Identifier. For CB congeners, enter the Laboratory File Identifier and the date of analysis.

3.5.5.2.9 Number all pages as described in Section 3.3.

3.5.6 HRGC/HRMS Descriptor Switching Resolution Summary (Form V CB-1)

3.5.6.1 Purpose

This form is used to report the descriptor switching windows for each level of chlorination for each 12-hour time period and to summarize the date and time of analyses of samples, including dilutions, reanalyses, standards, blanks, and requested MS/MSDs associated with each analysis of the Instrument Performance Check solution.

3.5.6.2 Instructions

Complete the header information according to the instructions in Section 3.3. Complete the remainder of the form using the following instructions.

3.5.6.2.1 Enter the date and time of the analysis (defined at time of injection) of the Level Of Chlorination (LOC)/Window-Defining Mixture (WDM). The date shall be entered as MM/DD/YYYY. The time shall be reported as military time.

3.5.6.2.2 Enter the HRGC column and internal diameter.

3.5.6.2.3 Enter the RT of the first eluting congener and the last eluting congener for each LOC. Report the RT in minutes. Seconds are to be reported as a decimal value of a whole minute (e.g., 21 min., 20 sec. is reported as 21.33).

3.5.6.2.4 In the lower table, list all samples including dilutions and reanalyses, standards, blanks, and MS/MSDs analyzed under that

instrument performance check in chronological order, by time of analysis (in military time). Refer to Section 3.3.7 for specific instructions for identifying standards and blanks.

3.5.6.2.5 Complete the following fields for all standards and samples, including dilutions and reanalyses, blanks, and MS/MSDs: "EPA Sample NO."; "LAB SAMPLE ID"; "LAB FILE ID"; "DATE ANALYZED"; and "TIME ANALYZED".

3.5.7 HRGC/HRMS Ion Abundance Ratio Summary (Form V CB-2, CB-3)

3.5.7.1 Purpose

These forms are used to report the ion abundance ratios and Signal-to-Noise (S/N) ratios for the congeners contained in the LOC/WDM for each 12-hour time period.

3.5.7.2 Instructions

Complete the header information according to the instructions in Section 3.3. Complete the remainder of the form using the following instructions.

3.5.7.2.1 Enter the date and time of the analysis of the LOC/WDM. The date shall be entered as MM/DD/YYYY. The time shall be reported as military time.

3.5.7.2.2 Enter the HRGC column and internal diameter.

3.5.7.2.3 Enter the ion abundance ratio and the S/N for each of the congeners/labeled congeners present in the mixture. Flag all data outside the QC limits.

3.5.8 HRGC/HRMS Initial Calibration Data (Form VI CB-1, CB-2, CB-3, CB-4)

3.5.8.1 Purpose

After a High Resolution Gas Chromatograph/High Resolution Mass Spectrometer (HRGC/HRMS) system has undergone an initial five or six-point calibration at the specific concentration levels described in Exhibit D, and after all initial calibration criteria have been met, the Contractor shall complete and submit these forms for each toxic CB congener initial calibration performed that is relevant to the samples, including dilutions, reanalyses, and blanks, regardless of when that calibration was performed. If a HRGC/HRMS system has undergone a single calibration for all native congeners at the specific concentration levels described in Exhibit D, and after all initial calibration criteria have been met, the Contractor shall complete and submit these forms for each native CB congener initial calibration performed that is relevant to the samples, including dilutions, reanalyses, and blanks, regardless of when the calibration was performed.

3.5.8.2 Instructions

Complete the header information according to the instructions in Section 3.3. Enter the Case Number and the SDG Number for the current data package, regardless of the original Case for which the

initial calibration was performed. Complete the remainder of the form using the following instructions.

3.5.8.2.1 Enter the date(s) of the calibration. If the calendar date changes during the calibration procedure, the inclusive dates shall be recorded. Dates shall be entered as MM/DD/YYYY.

3.5.8.2.2 Enter the injection times of the first and last of the standards analyzed in the "Calibration Times" field. Times shall be reported in military time.

3.5.8.2.3 Complete the "GC Column" and "ID" fields.

3.5.8.2.4 Complete the Relative Response (RR) and RRF data and the Ion Abundance Ratio data for the five (or six) calibration points. Calculate and report the Mean RR ($\overline{RR}$) or $\overline{RRF}$ and Percent Relative Standard Deviation (%RSD) for all toxic congeners, labeled compounds, cleanup standards, and internal standards in the calibration standards. See Exhibit D for equations. Report the QC Limits. For individual congeners, complete the RRF data and the Ion Abundance Ratio data for the single calibration point.

3.5.9 HRGC/HRMS Continuing Calibration Verification Data (Form VII CB-1, CB-2, CB-3, CB-4)

3.5.9.1 Purpose

Form VII is used to report the calibration verification of the HRGC/HRMS system by the analysis of specific calibration verification standard(s). Form VII is required for each 12-hour time period. The Contractor shall analyze the calibration verification standards and meet all criteria outlined in Exhibit D for the minimum RR and RRF and maximum Percent Difference between an initial calibration and CCVs.

3.5.9.2 Instructions

Complete the header information according to the instructions in Section 3.3. Complete the remainder of the form using the following instructions.

3.5.9.2.1 Enter the date and time of the CCV and the date(s) and times of the initial calibration (give inclusive dates if the initial calibration is performed over more than one date). Dates shall be entered as MM/DD/YYYY. Times shall be reported in military time.

3.5.9.2.2 Complete the "GC Column" and "ID" fields.

3.5.9.2.3 Using the appropriate initial calibration, enter the $\overline{RR}$ or $\overline{RRF}$ and Relative Retention Time (RRT) for each toxic congener, labeled compound, cleanup standard, and internal standard. If analysis of all 209 congeners is required, using the appropriate initial calibration, enter the RRF and RRT for each relative congener.

3.5.9.2.4 For Toxic CB Congeners analysis, use Form VII-CB1 and CB2 to report the RR and RRF data, the Ion Ratio, and the RT data for the CCV standard analysis. Calculate the Percent Difference for all toxic congeners, labeled compounds, cleanup standards, and internal standards in the calibration standards. See Exhibit D - Analytical Methods for CB Congeners, for equations. Flag any data

outside the QC Limits. For all 209 native congeners analysis, use Form VII-CB3 and CB4 to report the RRF data, the Ion Ratio, and the RT data for the continuing calibration verification standard analysis. Calculate the Percent Difference for all native congeners in the calibration standard. See Exhibit D - Analytical Methods for CB Congeners, for equations. Flag any data outside the QC limits.

3.5.10 CB Congener Analytical Sequence (Form VIII CB)

3.5.10.1 Purpose

This form is used to report the analytical sequence for CB congener analyses. At least one form is required for each GC column used for CB congener analyses.

3.5.10.2 Instructions

Complete the header information according to the instructions in Section 3.3. Complete the remainder of the form using the following instructions.

3.5.10.2.1 Enter the date(s) of the initial calibration. Give inclusive dates if the initial calibration is performed over more than one day. Dates shall be entered as MM/DD/YYYY.

3.5.10.2.2 Identify the GC column and internal diameter in the appropriate fields.

3.5.10.2.3 For every analysis associated with a particular analytical sequence starting with the initial calibration, enter the EPA Sample Number, Laboratory File Identifier, and date and time of analysis. Each sample analyzed as part of the sequence shall be reported on Form VIII **even** if it is not associated with the SDG. The Contractor shall use ZZZZZ as the EPA Sample Number to distinguish all samples that are not part of the SDG being reported.

3.5.10.2.4 If more than a single copy of Form VIII is required for CB congeners, enter the same header information on all subsequent pages for that GC column and instrument, and number each page as described in Section 3.3.

3.6 CDD/CDF and CB Congener Sample Log-In Sheet [Form DC-1]

This form documents the receipt and inspection of sample containers and samples. One original of Form DC-1 is required for each sample shipping container. If the samples in a single sample shipping container must be assigned to more than one SDG, the original Form DC-1 shall be placed with the deliverables for the lowest alpha numeric SDG number, and a copy of Form DC-1 must be placed with the deliverables for the other SDG(s). The copies should be identified as "copy(ies)", and the location of the original should be noted on the copies.

3.6.1 Sign and date the airbill (if present). Examine the shipping container and record the presence/absence of custody seals and their condition (e.g., intact, broken) in Item 1 of Form DC-1. Record the custody seal numbers in Item 2.

3.6.2 Open the container, remove the enclosed sample documentation, and record the presence/absence of Chain of Custody Records/Traffic Reports, packing lists, and airbills or airbill stickers in Items 3-5. Specify if there is an airbill present or an airbill sticker in Item 5. Record the airbill or sticker number in Item 6.

3.6.3 Remove the samples from the shipping container(s), examine the samples and the sample tags (if present), and record the condition of the sample bottles (e.g., intact, broken, leaking) and presence or absence of sample tags in Items 7 and 8.

3.6.4 Review the sample shipping documents and complete the header information as described in Section 3.3. Report the temperature of the cooler under Item 9. Compare the information recorded on all the documents and samples and circle the appropriate answer in Item 10.

3.6.5 If there are no problems observed during sample receipt, sign and date (include time) Form DC-1, and the Chain of Custody Record/Traffic Report, and write the Sample Numbers on Form DC-1. Record the appropriate sample tags and assigned laboratory numbers, if applicable. The log-in date should be recorded at the top of Form DC-1 and the date and time of cooler receipt at the laboratory should be recorded in Items 11 and 12. Record the specific area designation (e.g., refrigerator number) in the Sample Transfer block located in the bottom left corner of Form DC-1. Sign and date the Sample Transfer block. Cross out unused columns and spaces.

3.6.6 If there are problems observed during sample receipt or an answer marked with an asterisk (e.g., "absent*") was circled, contact the Task Order Project Officer (TOPO) and document the contact and the resolution of the problem on a Communication Log. Following resolution, sign and date the forms as specified in the preceding paragraph and note, where appropriate, the resolution of the problem.

3.7 CDD/CDF and CB Congeners Complete SDG File (CSF) Inventory Sheet [Form DC-2]

This form is used to record the inventory of the CSF documents and the count of documents in the original Sample Data Package that is sent to the TOPO.

3.7.1 Organize all CSF documents, as described in Section 2. Assemble the documents in the order specified on Form DC-2 (high resolution) and Section 2, and stamp each page with a consecutive number. (Do not number the DC-2 form.) Inventory the CSF by reviewing the document numbers and recording page number ranges in the columns provided in the Form DC-2 (high resolution). If there are no documents for a specific document type, enter "NA" in the empty space.

3.7.2 Certain laboratory-specific documents related to the CSF may not fit into a clearly-defined category. The laboratory should review Form DC-2 (high resolution) to determine if it is most appropriate to place them under Item 5, 6, 7, or 8. Item 8 should be used if there is no appropriate previous item. These types of documents should be described or listed in the blanks under each appropriate item.

Exhibit B -- Section 4
Data Reporting Forms

4.0 DATA REPORTING FORMS

The data reporting forms are shown on the following pages.

1A - Form I-HR CDD-1
CDD/CDF SAMPLE DATA SUMMARY
HIGH RESOLUTION

SAMPLE No.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ TO No.: _____ SDG No.: _____

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) _____ Lab Sample ID: _____

Sample wt/vol: _____ (g/ml) _____ Lab File ID: _____

Water Sample Prep: _____(SEPF/SPE) Date Received: _____

Concentrated Extract Volume: _____(uL) Date Extracted: _____

Injection Volume: ____(uL) % Solid/Lipids: _____ Date Analyzed: _____

GC Column: _____ ID: _____ (mm) Dilution Factor: _____

CONCENTRATION UNITS: (pg/L or ng/Kg) _____

TARGET ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDD	320/322					
2378-TCDF	304/306					
12378-PeCDF	340/342					
12378-PeCDD	356/358					
23478-PeCDF	340/342					
123478-HxCDF	374/376					
123678-HxCDF	374/376					
123478-HxCDD	390/392					
123678-HxCDD	390/392					
123789-HxCDD	390/392					
234678-HxCDF	374/376					
123789-HxCDF	374/376					
1234678-HpCDF	408/410					
1234678-HpCDD	424/426					
1234789-HpCDF	408/410					
OCDD	458/460					
OCDF	442/444					

NOTE: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Levels (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids).

LABELED COMPOUNDS	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDD	332/334			0.65-0.89		25-164
13C-12378-PeCDD	368/370			1.32-1.78		25-181
13C-123478-HxCDD	402/404			1.05-1.43		32-141
13C-123678-HxCDD	402/404			1.05-1.43		28-130
13C-1234678-HpCDD	436/438			0.88-1.20		23-140
13C-OCDD	470/472			0.76-1.02		17-157
13C-2378-TCDF	316/318			0.65-0.89		24-169
13C-12378-PeCDF	352/354			1.32-1.78		24-185
13C-23478-PeCDF	352/354			1.32-1.78		21-178
13C-123478-HxCDF	384/386			0.43-0.59		26-152
13C-123678-HxCDF	384/386			0.43-0.59		26-123
13C-123789-HxCDF	384/386			0.43-0.59		29-147
13C-234678-HxCDF	384/386			0.43-0.59		28-136
13C-1234678-HpCDF	418/420			0.37-0.51		28-143
13C-1234789-HpCDF	418/420			0.37-0.51		26-138
37C1-2378-TCDD	328/NA		NA	NA		35-197

```
# Column to be used to flag values outside QC limits.
```

1B - Form I-HR CDD-2
CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

SAMPLE No.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ TO No.: _____ SDG No.: _____

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) _____ Lab Sample ID: _____

Sample wt/vol: _____ (g/ml) _____ Lab File ID: _____

Water Sample Prep: _____(SEPF/SPE) Date Received: _____

Concentrated Extract Volume: _____(uL) Date Extracted: _____

Injection Volume: ____(uL) % Solid/Lipids: _____ Date Analyzed: _____

GC Column: _____ ID: _____ (mm) Dilution Factor: _____

CONCENTRATION UNITS: (pg/L or ng/Kg) _____

TARGET ANALYTE	CONCENTRATION	TEF*	TEF-ADJUSTED CONCENTRATION
2378-TCDD		x 1.0 =	
2378-TCDF		x 0.1 =	
12378-PeCDF		x 0.05 =	
12378-PeCDD		x 0.5 =	
23478-PeCDF		x 0.5 =	
123478-HxCDF		x 0.1 =	
123678-HxCDF		x 0.1 =	
123478-HxCDD		x 0.1 =	
123678-HxCDD		x 0.1 =	
123789-HxCDD		x 0.1 =	
234678-HxCDF		x 0.1 =	
123789-HxCDF		x 0.1 =	
1234678-HpCDF		x 0.01 =	
1234678-HpCDD		x 0.01 =	
1234789-HpCDF		x 0.01 =	
OCDD		x 0.001 =	
OCDF		x 0.001 =	
		Total =	

* TEF - Toxicity Equivalent Factors from EPA/625/3-89/016 March 1989 - Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and Chlorinated Dibenzofurans (CDDs and CDFs) and 1989 Update.

1C - Form I-HR CDD-3
CDF SECOND COLUMN CONFIRMATION
HIGH RESOLUTION

SAMPLE No.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ TO No.: _____ SDG No.: _____

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) _____ Lab Sample ID: _____

Sample wt/vol: _____ (g/ml) _____ Lab File ID: _____

Water Sample Prep: _____(SEPF/SPE) Date Received: _____

Concentrated Extract Volume: _____(uL) Date Extracted: _____

Injection Volume: ____(uL) % Solid/Lipids: _____ Date Analyzed: _____

GC Column: _____ ID: _____ (mm) Dilution Factor: _____

CONCENTRATION UNITS: (pg/L or ng/Kg) _____

ANALYTE	SELECTED IONS	PEAK RT	ION RATIO #	CONCENTRATION	Q	EMPC/EDL
2378-TCDF	304/306					

NOTE: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Limits (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with % Lipids).

LABELED COMPOUNDS	SELECTED IONS	PEAK RT	ION RATIO #	ION RATIO LIMITS	% REC #	RECOVERY LIMITS
13C-2378-TCDF	316/318			0.65-0.89		24-169
37Cl-2378-TCDD	328/NA		NA	NA		35-197

Column to be used to flag values outside Quality Control (QC) limits.

2A - Form II HR CDD
CDD/CDF TOTAL HOMOLOGUE CONCENTRATION SUMMARY
HIGH RESOLUTION

SAMPLE No.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ TO No.: _____ SDG No.: _____

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) _____ Lab Sample ID: _____

Sample wt/vol: _____ (g/ml) _____ Lab File ID: _____

Water Sample Prep: _____(SEPF/SPE) Date Received: _____

Concentrated Extract Volume: _____(uL) Date Extracted: _____

Injection Volume: ____(uL) % Solid/Lipids: _____ Date Analyzed: _____

GC Column: _____ ID: _____ (mm) Dilution Factor: _____

CONCENTRATION UNITS: (pg/L or ng/Kg) _____

HOMOLOGUE	PEAKS	CONCENTRATION	Q	EMPC/EDL
DIOXINS				
Total TCDD				
Total PeCDD				
Total HxCDD				
Total HpCDD				
FURANS				
Total TCDF				
Total PeCDF				
Total HxCDF				
Total HpCDF				

NOTE: Concentrations, Estimated Maximum Possible Concentrations (EMPCs), and Estimated Detection Limits (EDLs) for solid samples are calculated on a dry weight basis (except tissues, which are reported on a wet weight basis with %Lipids). The total homologue concentrations do not affect the TEF (Toxicity Equivalent Factor) calculations.

3A - Form III-HR CDD
CDD/CDF LAB CONTROL SAMPLE SUMMARY
HIGH RESOLUTION

SAMPLE No.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ TO No.: _____ SDG No.: _____

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) _____ Lab Sample ID: _____

Sample wt/vol: _____ (g/ml) _____ Lab File ID: _____

Water Sample Prep: _____(SEPF/SPE) Date Received: _____

Concentrated Extract Volume: _____(uL) Date Extracted: _____

Injection Volume: ____(uL) Date Analyzed: _____

GC Column: _____ ID: _____ (mm) Dilution Factor: _____

CONCENTRATION UNITS: (pg/L or ng/Kg) _____

SPIKE ANALYTE	SPIKE ADDED	AMOUNT RECOVERED	PERCENT RECOVERY	#	QC LIMITS
2378-TCDD					67-158
2378-TCDF					75-158
12378-PeCDF					80-134
12378-PeCDD					70-142
23478-PeCDF					68-160
123478-HxCDF					72-134
123678-HxCDF					84-130
123478-HxCDD					70-164
123678-HxCDD					76-134
123789-HxCDD					64-162
234678-HxCDF					70-156
123789-HxCDF					78-130
1234678-HpCDF					82-132
1234678-HpCDD					70-140
1234789-HpCDF					78-138
OCDD					78-144
OCDF					63-170

Column to be used to flag values outside Quality Control (QC) limits.

Laboratory Control Sample Recovery: _____ Outside limits out of _____ total.

4A - Form IV-HR CDD
CDD/CDF METHOD BLANK SUMMARY
HIGH RESOLUTION

SAMPLE No.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ TO No.: _____ SDG No.: _____

Matrix: (SOIL/WATER/ASH/TISSUE/OIL) _____ Lab Sample ID: _____

Water Sample Prep: _____(SEPF/SPE) Lab File ID: _____

GC Column: _____ ID: _____ (mm) Date Extracted: _____

Instrument ID: _____ Date Analyzed: _____

THIS METHOD BLANK APPLIES TO LABORATORY CONTROL SAMPLES (LCSs).

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED

5A - Form V-HR CDD-1
CDD/CDF WINDOW DEFINING MIX (WDM) SUMMARY
HIGH RESOLUTION

SAMPLE No.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ TO No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Lab File ID: _____

Instrument ID: _____ Date Analyzed: _____

Time Analyzed: _____

CDD/CDF	RT FIRST ELUTING	RT LAST ELUTING
TCDD		
TCDF		
PeCDD		
PeCDF		
HxCDD		
HxCDF		
HpCDD		
HpCDF		

5B - Form V-HR CDD-2
CDD/CDF CHROMATOGRAPHIC RESOLUTION SUMMARY
HIGH RESOLUTION

SAMPLE No.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ TO No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Lab File ID: _____

Instrument ID: _____ Date Analyzed: _____

Time Analyzed: _____

Percent Valley determination for DB-5 (or equivalent) column -
For the column performance solution beginning the 12-hour period:

1238-TCDD/2378-TCDD: _____

QUALITY CONTROL (QC) LIMITS:

Percent Valley between the TCDD isomers must be less than or equal to 25%.

Percent Valley Determination for DB-225 (or equivalent) column -
For the column Performance Solution beginning the 12-hour period:

2347-TCDF/2378-TCDF: _____

QC LIMITS:

Percent Valley between the TCDD/TCDF isomers must be less than or equal to 25%.

USEPA

5C - Form V-HR CDD-3
CDD/CDF ANALYTICAL SEQUENCE SUMMARY
HIGH RESOLUTION

Lab Name: ____________________ Contract: ______________________

Lab Code: ______ Case No.: ______ TO No.: __________ SDG No.: _____________

GC Column: ___________ ID: _____ (mm) Instrument ID: _____________

Init. Calib. Date(s): ___________ ____________

Init. Calib. Times: _____________ ____________

THE ANALYTICAL SEQUENCE OF STANDARDS, SAMPLES, BLANKS, AND LABORATORY CONTROL SAMPLES (LCSs) IS AS FOLLOWS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED

6A - Form VI-HR CDD-1
CDD/CDF INITIAL CALIBRATION RESPONSE FACTOR SUMMARY
HIGH RESOLUTION

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ TO No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Instrument ID: _____

Init. Calib. Date(s): _____ _____

Init. Calib. Times: _____ _____

TARGET ANALYTES	RR/RRF					MEAN RR/RRF	%RSD	QC LIMITS
	CS1	CS2	CS3	CS4	CS5			
2378-TCDD								± 20%
2378-TCDF								± 20%
12378-PeCDF								± 20%
12378-PeCDD								± 20%
23478-PeCDF								± 20%
123478-HxCDF								± 20%
123678-HxCDF								± 20%
123478-HxCDD								± 20%
123678-HxCDD								± 20%
123789-HxCDD[1]								± 20%
234678-HxCDF								± 20%
123789-HxCDF								± 20%
1234678-HpCDF								± 20%
1234678-HpCDD								± 20%
1234789-HpCDF								± 20%
OCDD								± 20%
OCDF[2]								± 20%
LABELED COMPOUNDS								
13C-2378-TCDD								± 35%
13C-12378-PeCDD								± 35%
13C-123478-HxCDD								± 35%
13C-123678-HxCDD								± 35%
13C-1234678-HpCDD								± 35%
13C-OCDD								± 35%
13C-2378-TCDF								± 35%
13C-12378-PeCDF								± 35%
13C-23478-PeCDF								± 35%
13C-123478-HxCDF								± 35%
13C-123678-HxCDF								± 35%
13C-123789-HxCDF								± 35%
13C-234678-HxCDF								± 35%
13C-1234678-HpCDF								± 35%
13C-1234789-HpCDF								± 35%
37C1-2378-TCDD								± 35%

[1]The Relative Response (RR) is calculated based on the labeled analogs of the other two HxCDDs.

[2]The RR is calculated based on the labeled analog of OCDD.

6B - Form VI-HR CDD-2
CDD/CDF INITIAL CALIBRATION ION ABUNDANCE RATIO SUMMARY
HIGH RESOLUTION

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ TO No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Instrument ID: _____

Init. Calib. Date(s): _____ _____

Init. Calib. Times: _____ _____

TARGET ANALYTES	SELECTED IONS	ION ABUNDANCE RATIO					FLAG	ION RATIO QC LIMITS
		CS1	CS2	CS3	CS4	CS5		
2378-TCDD	320/322							0.65-0.89
2378-TCDF	304/306							0.65-0.89
12378-PeCDF	340/342							1.32-1.78
12378-PeCDD	356/358							1.32-1.78
23478-PeCDF	340/342							1.32-1.78
123478-HxCDF	374/376							1.05-1.43
123678-HxCDF	374/376							1.05-1.43
123478-HxCDD	390/392							1.05-1.43
123678-HxCDD	390/392							1.05-1.43
123789-HxCDD	390/392							1.05-1.43
234678-HxCDF	374/376							1.05-1.43
123789-HxCDF	374/376							1.05-1.43
1234678-HpCDF	408/410							0.88-1.20
1234678-HpCDD	424/426							0.88-1.20
1234789-HpCDF	408/410							0.88-1.20
OCDD	458/460							0.76-1.02
OCDF	442/444							0.76-1.02
LABELED COMPOUNDS								
13C-2378-TCDD	332/334							0.65-0.89
13C-12378-PeCDD	368/370							1.32-1.78
13C-123478-HxCDD	402/404							1.05-1.43
13C-123678-HxCDD	402/404							1.05-1.43
13C-1234678-HpCDD	436/438							0.88-1.20
13C-OCDD	470/472							0.76-1.02
13C-2378-TCDF	316/318							0.65-0.89
13C-12378-PeCDF	352/354							1.32-1.78
13C-23478-PeCDF	352/354							1.32-1.78
13C-123478-HxCDF	384/386							0.43-0.59
13C-123678-HxCDF	384/386							0.43-0.59
13C-123789-HxCDF	384/386							0.43-0.59
13C-234678-HxCDF	384/386							0.43-0.59
13C-1234678-HpCDF	418/420							0.37-0.51
13C-1234789-HpCDF	418/420							0.37-0.51
INTERNAL STANDARDS								
13C-1234-TCDD	332/334							0.65-0.89
13C-123789-HxCDD	402/404							1.05-1.43

Quality Control (QC) limits represent ± 15% window around the theoretical ion abundance ratio. The laboratory must flag any analyte in any calibration solution which does not meet the ion abundance ratio QC limit by placing an asterisk in the flag column.

7A - Form VII-HR CDD-1
CDD/CDF CONTINUING CALIBRATION SUMMARY
HIGH RESOLUTION

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ TO No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Instrument ID: _____

Lab File ID: _____ Date Analyzed: _____ Time Analyzed: _____

Init. Calib. Times: _____ _____ Init. Calib. Date(s): _____ _____

TARGET ANALYTES	SELECTED IONS	RR/ RRF	MEAN RR/ RRF	%D	%D FLAG	ION RATIO	ION RATIO FLAG	ION RATIO QC LIMITS
2378-TCDD	320/322							0.65-0.89
2378-TCDF	304/306							0.65-0.89
12378-PeCDF	340/342							1.32-1.78
12378-PeCDD	356/358							1.32-1.78
23478-PeCDF	340/342							1.32-1.78
123478-HxCDF	374/376							1.05-1.43
123678-HxCDF	374/376							1.05-1.43
123478-HxCDD	390/392							1.05-1.43
123678-HxCDD	390/392							1.05-1.43
123789-HxCDD	390/392							1.05-1.43
234678-HxCDF	374/376							1.05-1.43
123789-HxCDF	374/376							1.05-1.43
1234678-HpCDF	408/410							0.88-1.20
1234678-HpCDD	424/426							0.88-1.20
1234789-HpCDF	408/410							0.88-1.20
OCDD	458/460							0.76-1.02
OCDF	442/444							0.76-1.02
LABELED COMPOUNDS								
13C-2378-TCDD	332/334							0.65-0.89
13C-12378-PeCDD	368/370							1.32-1.78
13C-123478-HxCDD	402/404							1.05-1.43
13C-123678-HxCDD	402/404							1.05-1.43
13C-1234678-HpCDD	436/438							0.88-1.20
13C-OCDD	470/472							0.76-1.02
13C-2378-TCDF	316/318							0.65-0.89
13C-12378-PeCDF	352/354							1.32-1.78
13C-23478-PeCDF	352/354							1.32-1.78
13C-123478-HxCDF	384/386							0.43-0.59
13C-123678-HxCDF	384/386							0.43-0.59
13C-123789-HxCDF	384/386							0.43-0.59
13C-234678-HxCDF	384/386							0.43-0.59
13C-1234678-HpCDF	418/420							0.37-0.51
13C-1234789-HpCDF	418/420							0.37-0.51
CLEAN-UP								
37C1-2378-TCDD	328/NA					NA	NA	NA
INTERNAL STANDARDS								
13C-1234-TCDD	332/334	NA	NA	NA	NA			0.65-0.89
13C-123789-HxCDD	402/404	NA	NA	NA	NA			1.05-1.43

The laboratory must flag any analyte which does not meet criteria for Percent Difference (%D) or ion abundance ratio by placing an asterisk in the appropriate flag column.

7B - Form VII-HR CDD-2
CDD/CDF CONTINUING CALIBRATION RETENTION TIME SUMMARY
HIGH RESOLUTION

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ TO No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Instrument ID: _____

Date Analyzed: _____ Time Analyzed: _____

Lab File ID: _____ Init. Calib. Date(s): _____ _____

TARGET ANALYTES	RRT	RT
2378-TCDD		
2378-TCDF		
12378-PeCDF		
12378-PeCDD		
23478-PeCDF		
123478-HxCDF		
123678-HxCDF		
123478-HxCDD		
123678-HxCDD		
123789-HxCDD		
234678-HxCDF		
123789-HxCDF		
1234678-HpCDF		
1234678-HpCDD		
1234789-HpCDF		
OCDD		
OCDF		
LABELED COMPOUNDS		
13C-2378-TCDD		
13C-12378-PeCDD		
13C-123478-HxCDD		
13C-123678-HxCDD		
13C-1234678-HpCDD		
13C-OCDD		
13C-2378-TCDF		
13C-12378-PeCDF		
13C-23478-PeCDF		
13C-123478-HxCDF		
13C-123678-HxCDF		
13C-123789-HxCDF		
13C-234678-HxCDF		
13C-1234678-HpCDF		
13C-1234789-HpCDF		
CLEAN-UP STANDARD		
37Cl-2378-TCDD	NA	
INTERNAL STANDARD		
13C-1234-TCDD	NA	
13C-123789-HxCDD	NA	

RRT = (RT of analyte)/(RT of appropriate labeled compound).

1D - FORM I CB-1 EPA SAMPLE NO.

TOXIC CB CONGENER SAMPLE
DATA SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SDG No.: _____

Matrix: (SOIL/WATER/TISSUE) _____ Lab Sample ID: _____

Sample wt/vol: _____ (g/ml) _____ Lab File ID: _____

Water Sample Prep: _____(SEPF/SPE/CONT) Date Received: _____

Concentrated Extract Volume: _____(uL) Date Extracted: _____

Injection Volume: ____(uL) % Solid/Lipids: _____ Date Analyzed: _____

GC Column: _____ ID: _____ (mm) Dilution Factor: _____

CONCENTRATION UNITS: (pg/L or ng/Kg) _____

TARGET ANALYTE	SELECTED IONS	PEAK RT	ION RATIO	CONCENTRATION	Q
77	290/292				
81	290/292				
105	326/328				
114	326/328				
118	326/328				
123	326/328				
126	326/328				
156/157	360/362				
167	360/362				
169	360/362				
189	394/396				

LABELED CONGENERS	SELECTED IONS	PEAK RT	ION RATIO	ION RATIO LIMITS	%REC	%REC LIMITS
77L	302/304			0.65 - 0.89		25 - 150
81L	302/304			0.65 - 0.89		25 - 150
105L	338/340			1.32 - 1.78		25 - 150
114L	338/340			1.32 - 1.78		25 - 150
118L	338/340			1.32 - 1.78		25 - 150
123L	338/340			1.32 - 1.78		25 - 150
126L	338/340			1.32 - 1.78		25 - 150
156L/157L	372/374			1.05 - 1.43		25 - 150
167L	372/374			1.05 - 1.43		25 - 150
169L	372/374			1.05 - 1.43		25 - 150
189L	406/408			0.89 - 1.21		25 - 150

1E - FORM I CB-2
TOXIC CB CONGENER TOXICITY
EQUIVALENCE SUMMARY

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SDG No.: _____

Matrix: (SOIL/WATER/TISSUE) _____ Lab Sample ID: _____

Sample wt/vol: _____ (g/ml) _____ Lab File ID: _____

Water Sample Prep: _____(SEPF/SPE/CONT) Date Received: _____

Concentrated Extract Volume: _____(uL) Date Extracted: _____

Injection Volume: ____(uL) % Solid/Lipids: _____ Date Analyzed: _____

GC Column: _____ ID: _____ (mm) Dilution Factor: _____

CONCENTRATION UNITS: (pg/L or ng/Kg) _____

TARGET ANALYTE	CONCENTRATION	TEF	TEF-ADJUSTED CONCENTRATION
77		x 0.0001 =	
81		x 0.0001 =	
105		x 0.0001 =	
114		x 0.0005 =	
118		x 0.0001 =	
123		x 0.0001 =	
126		x 0.1 =	
156/157		x 0.0005 =	
167		x 0.00001 =	
169		x 0.01 =	
189		x 0.0001 =	
		Total =	

1F - FORM I CB-3
CB CONGENER SAMPLE
DATA SUMMARY

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ No.: _____

Matrix: (SOIL/WATER/TISSUE) _____ Lab Sample ID: _____

Sample wt/vol: _____ (g/ml) _____ Lab File ID: _____

Water Sample Prep: _____(SEPF/SPE/CONT) Date Received: _____

Concentrated Extract Volume: _____(uL) Date Extracted: _____

Injection Volume: ____(uL) % Solid/Lipids: _____ Date Analyzed: _____

GC Column: _____ ID: _____ (mm) Dilution Factor: _____

CONCENTRATION UNITS: (pg/L or ng/Kg) _____

TARGET ANALYTE	CONCENTRATION	Q
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		

31		
32		

FORM I CB-3 Con't

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ No.: _____

Matrix: (SOIL/WATER/TISSUE) _____ Lab Sample ID: _____

Sample wt/vol: _____ (g/ml) _____ Lab File ID: _____

Water Sample Prep: _____(SEPF/SPE/CONT) Date Received: _____

Concentrated Extract Volume: _____(uL) Date Extracted: _____

Injection Volume: ____(uL) % Solid/Lipids: _____ Date Analyzed: _____

GC Column: _____ ID: _____ (mm) Dilution Factor: _____

CONCENTRATION UNITS: (pg/L or ng/Kg) _____

TARGET ANALYTE	CONCENTRATION	Q
33		
34		
35		
36		
37		
38		
39		
40		
41		
42		
43		
44		
45		
46		
47		
48		
49		
50		
51		
52		
53		
54		
55		
56		
57		
58		
59		
60		

61		
62		

Page _____ of _____

FORM I CB-3 Con't

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ No.: _____

Matrix: (SOIL/WATER/TISSUE) _____ Lab Sample ID: _____

Sample wt/vol: _____ (g/ml) _____ Lab File ID: _____

Water Sample Prep: _____(SEPF/SPE/CONT) Date Received: _____

Concentrated Extract Volume: _____(uL) Date Extracted: _____

Injection Volume: ____(uL) % Solid/Lipids: _____ Date Analyzed: _____

GC Column: _____ ID: _____ (mm) Dilution Factor: _____

CONCENTRATION UNITS: (pg/L or ng/Kg) _____

TARGET ANALYTE	CONCENTRATION	Q
63		
64		
65		
66		
67		
68		
69		
70		
71		
72		
73		
74		
75		
76		
78		
79		
80		
82		
83		
84		
85		
86		
87		
88		

89		
90		
91		
92		

Page ___ of ____

FORM I CB-3 Con't

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ No.: _____

Matrix: (SOIL/WATER/TISSUE) _____ Lab Sample ID: _____

Sample wt/vol: _____ (g/ml) _____ Lab File ID: _____

Water Sample Prep: _____(SEPF/SPE/CONT) Date Received: _____

Concentrated Extract Volume: _____(uL) Date Extracted: _____

Injection Volume: ____(uL) % Solid/Lipids: _____ Date Analyzed: _____

GC Column: _____ ID: _____ (mm) Dilution Factor: _____

CONCENTRATION UNITS: (pg/L or ng/Kg) _____

TARGET ANALYTE	CONCENTRATION	Q
93		
94		
95		
96		
97		
98		
99		
100		
101		
102		
103		
104		
106		
107		
108		
109		
110		
111		
112		
113		
115		

116		
117		
119		
120		
121		

Page ____ of ____

FORM I CB-3 Con't

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ No.: _____

Matrix: (SOIL/WATER/TISSUE) _____ Lab Sample ID: _____

Sample wt/vol: _____ (g/ml) _____ Lab File ID: _____

Water Sample Prep: _____(SEPF/SPE/CONT) Date Received: _____

Concentrated Extract Volume: _____(uL) Date Extracted: _____

Injection Volume: ____(uL) % Solid/Lipids: _____ Date Analyzed: _____

GC Column: _____ ID: _____ (mm) Dilution Factor: _____

CONCENTRATION UNITS: (pg/L or ng/Kg) _____

TARGET ANALYTE	CONCENTRATION	Q
122		
124		
125		
127		
128		
129		
130		
131		
132		
133		
134		
135		
136		
137		
138		
139		
140		
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143		

144		
145		
146		
147		
148		
149		
150		
151		

Page ___of ___

FORM I CB-3 Con't

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ No.: _____

Matrix: (SOIL/WATER/TISSUE) _____ Lab Sample ID: _____

Sample wt/vol: _____ (g/ml) _____ Lab File ID: _____

Water Sample Prep: _____(SEPF/SPE/CONT) Date Received: _____

Concentrated Extract Volume: _____(uL) Date Extracted: _____

Injection Volume: ____(uL) % Solid/Lipids: _____ Date Analyzed: _____

GC Column: _____ ID: _____ (mm) Dilution Factor: _____

CONCENTRATION UNITS: (pg/L or ng/Kg) _____

TARGET ANALYTE	CONCENTRATION	Q
152		
153		
154		
155		
158		
159		
160		
161		
162		
163		
164		
165		
166		
168		
170		
171		
172		
173		
174		

175		
176		
177		
178		
179		
180		
181		

Page ___ of ___

FORM I CB-3 Con't

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ No.: _____

Matrix: (SOIL/WATER/TISSUE) _____ Lab Sample ID: _____

Sample wt/vol: _____ (g/ml) _____ Lab File ID: _____

Water Sample Prep: _____(SEPF/SPE/CONT) Date Received: _____

Concentrated Extract Volume: _____(uL) Date Extracted: _____

Injection Volume: ____(uL) % Solid/Lipids: _____ Date Analyzed: _____

GC Column: _____ ID: _____ (mm) Dilution Factor: _____

CONCENTRATION UNITS: (pg/L or ng/Kg) _____

TARGET ANALYTE	CONCENTRATION	Q
182		
183		
184		
185		
186		
187		
188		
190		
191		
192		
193		
194		
195		
196		
197		
198		
199		

200		
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202		
203		
204		
205		
206		
207		
208		
209		

Page ___ of ___

2B - Form II CB
CB CONGENER TOTAL HOMOLOGUE
CONCENTRATION SUMMARY

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SDG No.: _____

Matrix: (SOIL/WATER/TISSUE) _____ Lab Sample ID: _____

Sample wt/vol: _____ (g/ml) _____ Lab File ID: _____

Water Sample Prep: _____(SEPF/SPE/CONT) Date Received: _____

Concentrated Extract Volume: _____(uL) Date Extracted: _____

Injection Volume: ____(uL) % Solid/Lipids: _____ Date Analyzed: _____

GC Column: _____ ID: _____ (mm) Dilution Factor: _____

CONCENTRATION UNITS: (pg/L or ng/Kg) _____

HOMOLOGUE	PEAKS	CONCENTRATION	Q
Total Mono CB			
Total Di CB			
Total Tri CB			
Total Tetra CB			
Total Penta CB			
Total Hexa CB			
Total Hepta CB			
Total Octa CB			
Total Nona CB			

4B - FORM IV CB
CB CONGENER METHOD BLANK SUMMARY

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SDG No.: _____

Matrix: (SOIL/WATER/TISSUE) _____ Lab Sample ID: _____

Water Sample Prep: _____ (SEPF/SPE/CONT) Lab File ID: _____

GC Column: _____ ID: _____ (mm) Date Extracted: _____

Instrument ID: _____ Date Analyzed: _____

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED

5D - FORM V CB-1
CB CONGENER DESCRIPTOR SWITCHING
RESOLUTION SUMMARY

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Lab File ID: _____

Instrument ID: _____ Date Analyzed: _____

Time Analyzed: _____

	LEVEL OF CHLORINATION	RT FIRST ELUTING	RT LAST ELUTING
01			
02			
03			
04			
05			
06			
07			
08			
09			

5E - FORM V CB-2
CB CONGENER ION ABUNDANCE
RATIO SUMMARY

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Lab File ID: _____

Instrument ID: _____ Date Analyzed: _____

Time Analyzed: _____

CB CONGENER	ION ABUNDANCE RATIO	ION RATIO LIMITS	S/N	
1		2.66 - 3.60		
3		2.66 - 3.60		
4		1.33 - 1.79		
15		1.33 - 1.79		
19		0.88 - 1.20		
37		0.88 - 1.20		
54		0.65 - 0.89		
77		0.65 - 0.89		
81		0.65 - 0.89		
104		1.32 - 1.78		
105		1.32 - 1.78		
114		1.32 - 1.78		
118		1.32 - 1.78		
123		1.32 - 1.78		
126		1.32 - 1.78		
155		1.05 - 1.43		
156		1.05 - 1.43		
157		1.05 - 1.43		
167		1.05 - 1.43		
169		1.05 - 1.43		
188		0.89 - 1.21		
189		0.89 - 1.21		
202		0.76 - 1.02		
205		0.76 - 1.02		
206		0.65 - 0.89		
208		0.65 - 0.89		
209		0.59 - 0.79		

5F - FORM V CB-3

CB CONGENER (LABELED) ION ABUNDANCE RATIO SUMMARY

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Lab File ID: _____

Instrument ID: _____ Date Analyzed: _____

Time Analyzed: _____

CB CONGENER	ION ABUNDANCE RATIO	ION RATIO LIMITS	S/N	
1L		2.66 - 3.60		
3L		2.66 - 3.60		
4L		1.33 - 1.79		
15L		1.33 - 1.79		
19L		0.88 - 1.20		
37L		0.88 - 1.20		
54L		0.65 - 0.89		
77L		0.65 - 0.89		
81L		0.65 - 0.89		
104L		1.32 - 1.78		
105L		1.32 - 1.78		
114L		1.32 - 1.78		
118L		1.32 - 1.78		
123L		1.32 - 1.78		
126L		1.32 - 1.78		
155L		1.05 - 1.43		
156L		1.05 - 1.43		
157L		1.05 - 1.43		
167L		1.05 - 1.43		
169L		1.05 - 1.43		
188L		0.89 - 1.21		
189L		0.89 - 1.21		
202L		0.76 - 1.02		
205L		0.76 - 1.02		
206L		0.65 - 0.89		
208L		0.65 - 0.89		
209L		0.59 - 0.79		
LABELED CLEANUP				
28L		0.88 - 1.20		
111L		1.32 - 1.78		
178L		0.89 - 1.21		
INTERNAL STANDARDS				
9L		1.33 - 1.79		
52L		0.65 - 0.89		
101L		1.32 - 1.78		
138L		1.05 - 1.43		
194L		0.76 - 1.02		

6C - Form VI CB-1
TOXIC CB CONGENER INITIAL CALIBRATION RESPONSE
FACTOR SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Instrument ID: _____

Init. Calib. Date(s): _____ _____

Init. Calib. Times: _____ _____

TARGET ANALYTES	RR/RRF						$\overline{RR}/\overline{RRF}$	%RSD	QC LIMITS
	CS 0.2	CS 1	CS 2	CS 3	CS 4	CS 5			
77									
81									
105									
114									
118									
123									
126									
156/157									
167									
169									
189									
LABELED CONGENERS									
77L									
81L									
105L									
114L									
118L									
123L									
126L									
156L/157L									
167L									
169L									
189L									
LABELED CLEANUP									
28L									
111L									
178L									
INTERNAL STANDARDS									
9L									
52L									
101L									
138L									
194L									

6D - Form VI CB-2
TOXIC CB CONGENER INITIAL CALIBRATION
ION ABUNDANCE RATIO SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Instrument ID: _____

Init. Calib. Date(s): _____ _____

Init. Calib. Times: _____ _____

TARGET ANALYTES	ION ABUNDANCE RATIOS						IONS	FLAG	QC LIMITS
	CS 0.2	CS 1	CS 2	CS 3	CS 4	CS 5			
77							290/292		
81							290/292		
105							326/328		
114							326/328		
118							326/328		
123							326/328		
126							326/328		
156/157							360/362		
167							360/362		
169							360/362		
189							394/396		
LABELED CONGENERS									
77L							302/304		
81L							302/304		
105L							338/340		
114L							338/340		
118L							338/340		
123L							338/340		
126L							338/340		
156L/157L							372/374		
167L							372/374		
169L							372/374		
189L							406/408		
LABELED CLEANUP									
28L									
111L									
178L									
INTERNAL STANDARDS									
9L									
52L									
101L									
138L									
194L									

6E - Form VI CB-3
CB CONGENER INITIAL CALIBRATION RESPONSE
FACTOR SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Instrument ID: _____

Init. Calib. Date(s): _____ _____

Init. Calib. Times: _____ _____

TARGET ANALYTES	RR/RRF						$\overline{RR}/\overline{RRF}$	%RSD	QC LIMITS
	CS 0.2	CS 1	CS 2	CS 3	CS 4	CS 5			
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									
31									
32									
33									
34									
35									

36									
37									

6E - Form VI CB-3 Con't

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Instrument ID: _____

Init. Calib. Date(s): _____ _____

Init. Calib. Times: _____ _____

TARGET ANALYTES	RR/RRF						$\overline{RR}/\overline{RRF}$	%RSD	QC LIMITS
	CS 0.2	CS 1	CS 2	CS 3	CS 4	CS 5			
38									
39									
40									
41									
42									
43									
44									
45									
46									
47									
48									
49									
50									
51									
52									
53									
54									
55									
56									
57									
58									
59									
60									
61									
62									
63									
64									
65									
66									
67									
68									
69									
70									
71									
72									

73									
74									
75									
76									

Page __ of ___

6E - Form VI CB-3 Con't

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Instrument ID: _____

Init. Calib. Date(s): _____ _____

Init. Calib. Times: _____ _____

TARGET ANALYTES	RR/RRF						$\overline{RR}/\overline{RRF}$	%RSD	QC LIMITS
	CS 0.2	CS 1	CS 2	CS 3	CS 4	CS 5			
78									
79									
80									
82									
83									
84									
85									
86									
87									
88									
89									
90									
91									
92									
93									
94									
95									
96									
97									
98									
99									
100									
101									
102									
103									
104									
106									
107									
108									
109									
110									
111									
112									
113									
115									

6E - Form VI CB-3 Con't

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Instrument ID: _____

Init. Calib. Date(s): _____ _____

Init. Calib. Times: _____ _____

TARGET ANALYTES	RR/RRF						$\overline{RR}/\overline{RRF}$	%RSD	QC LIMITS
	CS 0.2	CS 1	CS 2	CS 3	CS 4	CS 5			
116									
117									
118									
119									
120									
121									
122									
124									
125									
127									
128									
129									
130									
131									
132									
133									
134									
135									
136									
137									
138									
139									
140									
141									
142									
143									
144									
145									
146									
147									
148									
149									
150									
151									

152									
153									
154									

Page ___ of ___

6E - Form VI CB-3 Con't

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Instrument ID: _____

Init. Calib. Date(s): _____ _____

Init. Calib. Times: _____ _____

TARGET ANALYTES	RR/RRF						$\overline{RR}/\overline{RRF}$	%RSD	QC LIMITS
	CS 0.2	CS 1	CS 2	CS 3	CS 4	CS 5			
155									
158									
159									
160									
161									
162									
163									
164									
165									
166									
168									
170									
171									
172									
173									
174									
175									
176									
177									
178									
179									
180									
181									
182									
183									
184									
185									
186									
187									
188									
190									

191									
192									
193									

Page __ of __

6E - Form VI CB-3 Con't

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Instrument ID: _____

Init. Calib. Date(s): _____ _____

Init. Calib. Times: _____ _____

TARGET ANALYTES	RR/RRF						$\overline{RR}/\overline{RRF}$	%RSD	QC LIMITS
	CS 0.2	CS 1	CS 2	CS 3	CS 4	CS 5			
194									
195									
196									
197									
198									
199									
200									
201									
202									
203									
204									
205									
206									
207									
208									
209									

6F - Form VI CB-4
CB CONGENER INITIAL CALIBRATION
ION ABUNDANCE RATIO SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Instrument ID: _____

Init. Calib. Date(s): _____ _____

Init. Calib. Times: _____ _____

TARGET ANALYTES	ION ABUNDANCE RATIOS						IONS	FLAG	QC LIMITS
	CS 0.2	CS 1	CS 2	CS 3	CS 4	CS 5			
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									

27									
28									
29									
30									
31									
32									
33									
34									
35									
36									
37									
38									

6F - Form VI CB-4 Con't

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Instrument ID: _____

Init. Calib. Date(s): _____ _____

Init. Calib. Times: _____ _____

TARGET ANALYTES	ION ABUNDANCE RATIOS						IONS	FLAG	QC LIMITS
	CS 0.2	CS 1	CS 2	CS 3	CS 4	CS 5			
39									
40									
41									
42									
43									
44									
45									
46									
47									
48									
49									
50									
51									
52									
53									
54									
55									
56									
57									
58									
59									
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61									
62									
63									
64									

65									
66									
67									
68									
69									
70									
71									
72									
73									
74									
75									
76									

Page __of __

6F - Form VI CB-4 Con't

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Instrument ID: _____

Init. Calib. Date(s): _____ _____

Init. Calib. Times: _____ _____

TARGET ANALYTES	ION ABUNDANCE RATIOS						IONS	FLAG	QC LIMITS
	CS 0.2	CS 1	CS 2	CS 3	CS 4	CS 5			
78									
79									
80									
82									
83									
84									
85									
86									
87									
88									
89									
90									
91									
92									
93									
94									
95									
96									
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100									
101									
102									
103									
104									
106									
107									
108									
109									
110									
111									
112									
113									
115									
116									

6F - Form VI CB-4 Con't

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Instrument ID: _____

Init. Calib. Date(s): _____ _____

Init. Calib. Times: _____ _____

TARGET ANALYTES	ION ABUNDANCE RATIOS						IONS	FLAG	QC LIMITS
	CS 0.2	CS 1	CS 2	CS 3	CS 4	CS 5			
117									
118									
119									
120									
121									
122									
124									
125									
127									
128									
129									
130									
131									
131									
132									
133									
134									
135									
136									
137									
138									
139									
140									
141									
142									
143									
144									
145									
146									
147									
148									
149									
150									
151									
152									

153									
154									

Page __ of ___

6F - Form VI CB-4 Con't

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Instrument ID: _____

Init. Calib. Date(s): _____ _____

Init. Calib. Times: _____ _____

TARGET ANALYTES	ION ABUNDANCE RATIOS						IONS	FLAG	QC LIMITS
	CS 0.2	CS 1	CS 2	CS 3	CS 4	CS 5			
155									
158									
159									
160									
161									
162									
163									
164									
165									
166									
168									
170									
171									
172									
173									
174									
175									
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177									
178									
179									
180									
181									
182									
183									
184									
185									
186									
187									
188									

190									
191									
192									
193									

Page __ of ___

6F - Form VI CB-4 Con't

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Instrument ID: _____

Init. Calib. Date(s): _____ _____

Init. Calib. Times: _____ _____

TARGET ANALYTES	ION ABUNDANCE RATIOS						IONS	FLAG	QC LIMITS
	CS 0.2	CS 1	CS 2	CS 3	CS 4	CS 5			
194									
195									
196									
197									
198									
199									
200									
201									
202									
203									
204									
205									
206									
207									
208									
209									

7C - FORM VII CB-1
TOXIC CB CONGENER CONTINUING
CALIBRATION SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Instrument ID: _____

Lab File ID: _____ Date Analyzed: _____ Time Analyzed: _____

Init. Calib. Times: _____ _____ Init. Calib. Date(s): _____ _____

TARGET ANALYTES	RR/RRF	$\overline{RR}/\overline{RRF}$	%D	%D FLAG	ION RATIO	ION RATIO FLAG
77						
81						
105						
114						
118						
123						
126						
156/157						
167						
169						
189						
LABELED CONGENERS						
77L						
81L						
105L						
114L						
118L						
123L						
126L						
156L/157L						
167L						
169L						
189L						
LABELED CLEANUP						
28L						
111L						

178L						
INTERNAL STANDARDS						
9L						
52L						
101L						
138L						
194L						

7D - FORM VII CB-2
TOXIC CB CONGENER CONTINUING CALIBRATION
RETENTION TIME SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Instrument ID: _____

Date Analyzed: _____ Time Analyzed: _____

Lab File ID: _____ Init. Calib. Date(s): _____ _____

TARGET ANALYTES	RRT	RT
77		
81		
105		
114		
118		
123		
126		
156/157		
167		
169		
189		
LABELED CONGENERS		
77L		
81L		
105L		
114L		
118L		
123L		
126L		
156L/157L		
167L		
169L		
189L		
LABELED CLEANUP		
28L		
111L		
178L		
INTERNAL STANDARDS		
9L		
52L		
101L		
138L		
194L		

7E - FORM VII CB-3
CB CONGENER CONTINUING
CALIBRATION SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Instrument ID: _____

Lab File ID: _____ Date Analyzed: _____ Time Analyzed: _____

Init. Calib. Times: _____ _____ Init. Calib. Date(s): _____ _____

TARGET ANALYTES	RR/RRF	$\overline{RR}$/RRF	%D	%D FLAG	ION RATIO	ION RATIO FLAG
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
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20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						
34						

35						
36						
37						

7E - Form VII CB-3 Con't

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Instrument ID: _____

Lab File ID: _____ Date Analyzed: _____ Time Analyzed: _____

Init. Calib. Times: _____ _____ Init. Date(s): _____ _____

TARGET ANALYTES	RR/RRF	$\overline{RR}$/RRF	%D	%D FLAG	ION RATIO	ION RATIO FLAG
38						
39						
40						
41						
42						
43						
44						
45						
46						
47						
48						
49						
50						
51						
52						
53						
54						
55						
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57						
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62						
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64						
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68						
69						
70						
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72						
73						
74						
75						

Page __ of __

7E - Form VII CB-3 Con't

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Instrument ID: _____

Lab File ID: _____ Date Analyzed: _____ Time Analyzed: _____

Init. Calib. Times: _____ _____ Init. Date(s): _____ _____

TARGET ANALYTES	RR/RRF	$\overline{RR}$/RRF	%D	%D FLAG	ION RATIO	ION RATIO FLAG
76						
78						
79						
80						
82						
83						
84						
85						
86						
87						
88						
89						
90						
91						
92						
93						
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107						
108						
109						
110						
111						
112						

7E - Form VII CB-3 Con't

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Instrument ID: _____

Lab File ID: _____ Date Analyzed: _____ Time Analyzed: _____

Init. Calib. Times: _____ _____ Init. Date(s): _____ _____

TARGET ANALYTES	RR/RRF	$\overline{RR}$/RRF	%D	%D FLAG	ION RATIO	ION RATIO FLAG
113						
115						
116						
117						
119						
120						
121						
122						
124						
125						
127						
128						
129						
130						
131						
132						
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148						
149						

7E - Form VII CB-3 Con't

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Instrument ID: _____

Lab File ID: _____ Date Analyzed: _____ Time Analyzed: _____

Init. Calib. Times: _____ _____ Init. Date(s): _____ _____

TARGET ANALYTES	RR/RRF	$\overline{RR}$/RRF	%D	%D FLAG	ION RATIO	ION RATIO FLAG
150						
151						
152						
153						
154						
158						
159						
160						
161						
162						
163						
164						
165						
166						
168						
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185						
186						
187						

Page ___ of ____

7E - Form VII CB-3 Con't

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Instrument ID: _____

Lab File ID: _____ Date Analyzed: _____ Time Analyzed: _____

Init. Calib. Times: _____ _____ Init. Date(s): _____ _____

TARGET ANALYTES	RR/RRF	$\overline{RR}$/RRF	%D	%D FLAG	ION RATIO	ION RATIO FLAG
188						
190						
191						
192						
193						
194						
195						
196						
197						
198						
199						
200						
201						
202						
203						
204						
205						
206						
207						
208						
209						

Page ____ of ____

7F - FORM VII CB-4
CB CONGENER CONTINUING CALIBRATION
RETENTION TIME SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Instrument ID: _____

Date Analyzed: _____ Time Analyzed: _____

Lab File ID: _____ Init. Calib. Date(s): _____ _____

TARGET ANALYTES	RRT	RT
1		
2		
3		
4		
5		
6		
7		
8		
9		
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11		
12		
13		
14		
15		
16		
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40		

7F - Form VII CB-4 Con't

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Instrument ID: _____

Date Analyzed: _____ Time Analyzed: _____

Lab File ID: _____ Init. Calib. Date(s): _____ _____

TARGET ANALYTES	RRT	RT
41		
42		
43		
44		
45		
46		
47		
48		
49		
50		
51		
52		
53		
54		
55		
56		
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Page ___ of _

7F - Form VII CB-4 Con't

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Instrument ID: _____

Date Analyzed: _____ Time Analyzed: _____

Lab File ID: _____ Init. Calib. Date(s): _____ _____

TARGET ANALYTES	RRT	RT
82		
83		
84		
85		
86		
87		
88		
89		
90		
91		
92		
93		
94		
95		
96		
97		
98		
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116		
117		
119		
120		

Page ___ of ___

7F - Form VII CB-4 Con't

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Instrument ID: _____

Date Analyzed: _____ Time Analyzed: _____

Lab File ID: _____ Init. Calib. Date(s): _____ _____

TARGET ANALYTES	RRT	RT
121		
122		
124		
125		
127		
128		
129		
130		
131		
132		
133		
134		
135		
136		
137		
138		
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159		
160		

Page ___ of ____

7F - Form VII CB-4 Con't

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Instrument ID: _____

Date Analyzed: _____ Time Analyzed: _____

Lab File ID: _____ Init. Calib. Date(s): _____ _____

TARGET ANALYTES	RRT	RT
161		
162		
163		
164		
165		
166		
168		
170		
171		
172		
173		
174		
175		
176		
177		
178		
179		
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198		
199		

200		

Page ___ of ___

7F - Form VII CB-4 Con't

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Instrument ID: _____

Date Analyzed: _____ Time Analyzed: _____

Lab File ID: _____ Init. Calib. Date(s): _____ _____

TARGET ANALYTES	RRT	RT
201		
202		
203		
204		
205		
206		
207		
208		
209		

8A- FORM VIII CB
CB CONGENER ANALYTICAL SEQUENCE

Lab Name:_____ Contract: _____

Lab Code:_____ Case No.:_____ SDG No.:_____

GC Column: _____ ID:_____ (mm) Init. Calib. Date(s):_____

Instrument ID: _____

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, STANDARDS, METHODS, and LCS's IS GIVEN BELOW:

	EPA SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01				
02				
03				
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
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22				

23				
24				
25				
26				
27				

Page ____ of ____

CDD/CDF and CB CONGENER
SAMPLE LOG-IN SHEET (DC-1)

Lab Name					Page ____ of _____
Received By (Print Name)					Log-in Date
Received By (Signature)					
Contract No.					TO No.
Case No.		Sample Delivery Group No.			
Remarks:			Corresponding		Remarks: Condition of Sample Shipment, etc.
		EPA Sample #	Sample Tag #	Assigned Lab #	
1. Custody Seal(s)	Present/Absent* Intact/Broken				
2. Custody Seal Nos.	_____ _____				
3. Chain of Custody Records	Present/Absent*				
4. Traffic Reports or Packing Lists	_____ _____				
5. Airbill	Airbill/Sticker Present/Absent*				
6. Airbill No.	_____ _____				
7. Sample Tags	Present/Absent*				
Sample Tag Numbers	Listed/Not Listed on Chain of Custody Record				
8. Sample Condition	Intact/Broken*/ Leaking				
9. Cooler Temperature	_____				
10. Does information on custody records and sample tags agree?	Yes/No*				
11. Date Received at Laboratory	_____				
12. Time Received	_____				
Sample Transfer					

Fraction	Fraction				
Area #	Area #				
By	By				
On	On				

* Contact SMO and attach record of resolution.

Reviewed By	Logbook No.
Date	Logbook Page No.

CDD/CDF AND CB CONGENER COMPLETE SDG FILE (CSF) INVENTORY SHEET

LABORATORY NAME _____

CITY/STATE _____

CASE NO. _____ SDG NO. _____ SDG NOS. TO FOLLOW _____ _____ _____

TASK ORDER NO. _____

CONTRACT NO. _____

SOW NO. _____

All documents delivered in the Complete SDG File must be original documents where possible. (Reference - Exhibit B Section 2.6)

		PAGE NOs.		CHECK	
		FROM	TO	LAB	EPA
1.	**Inventory Sheet** (DC-2) (Do not number)				
2.	**SDG Narrative**				
3.	**Traffic Report**				
4.	**CDD/CDF Data**				
	a. Sample Data				
	Sample Data Summary (Form I-HR CDD-1)				
	Toxicity Equivalence Summary (Form I-HR CDD-2)				
	Second Column confirmation Summary (Form I-HR CDD-3)				
	Selected Ion Current Profile (SICP) for each sample				
	Quantitation Reports and Area Summaries				
	Total Homologue Concentration Summary (Form II-HR CDD)				
	b. Quality Control Data				
	Lab Control Sample Summary (Form III-HR CDD-1)				
	Lab Control Sample Duplicate Summary (Form III-HR CDD-2)				
	Method Blank Summary (Form IV-HR CDD)				
	Window Defining Mix Summary (Form V-HR CDD-1)				
	Chromatographic Resolution Summary (Form V-HR CDD-2)				
	Analytical Sequence Summary (Form V-HR CDD-3)				
	c. Calibration Data				
	Initial Calibration Data (Form VI-HR CDD-1 and Form VI-HR CDD-2), PFK mass resolution, CDD/CDF standard(s) SICPs, Quantitation Reports, and Area Summaries for the initial (five-point) calibration				
	Continuing Calibration Data (Form VII-HR CDD-1 and Form VII-HR CDD-2), PFK mass resolution, SICPs, Quantitation Reports, and Area Summaries				
	d. Raw Quality Control Data				
	Blank Data Form I-HR CDD-1, CDD-2, CDD-3 (if applicable)				

	PAGE NOs.		CHECK	
	FROM	TO	LAB	EPA
Blank Data including SICPs, Quantitation Reports, and Area Summaries for each blank analyzed	____	____	____	____
LCS Form I-HR CDD-1 and CDD-2	____	____	____	____
LCS Data including SICPs, Quantitation Reports, and Area Summaries	____	____	____	____
4. CB Congener Data				
a. Sample Data				
Toxic CB Congener Data Summary (Form I CB-1)	____	____	____	____
Toxic CB Congener Toxicity Equivalence Summary (Form I CB-2)	____	____	____	____
CB Congener Sample Data Summary (Form I CB-3)	____	____	____	____
Selected Ion Current Profile (SICP) for each sample	____	____	____	____
Quantitation Reports and Area Summaries	____	____	____	____
Total Homologue Concentration Summary (Form II CB)	____	____	____	____
b. Quality Control Data				
Method Blank Summary (Form IV CB)	____	____	____	____
CB Congner Descriptor Switching Resolution Summary (Form V CB-1)	____	____	____	____
CB Congener Ion Abundance Ratio Summary (Form V CB-2)	____	____	____	____
CB Congener (Labeled) Ion Abundance Ratio Summary (Form V CB-3)				
Analytical Sequence Summary (Form VIII CB)	____	____	____	____
c. Calibration Data				
Toxic CB Congener Initial Calibration Response Factor Summary (Form VI CB-1)	___	____	____	____
Toxic CB Congener Initial Calibration Ion Abundance Ratio Summary (VI CB-2)	____	____	____	____
CB Congener Initial Calibration Response Factor Summary (Form VI CB-3)				
CB Congener Initial Calibration Ion Abundance Ratio Summary (VI CB-4)				
Toxic CB Congener Continuing Calibration Summary (VII CB-1)	____	____	____	____
Toxic CB Congener Continuing Calibration Retention Time Summary (VII CB-2)	____	____	____	____
CB Congener Continuing Calibration Summary (VII CB-3)				
CB Congener Continuing Calibration Retention Time Summary (VII CB-4)				
d. Raw Quality Control Data				
Blank Data Form I CB-1, CB-2, CB-3 (if applicable)	____	____	____	____
Blank Data including SICPs, Quantitation Reports, and Area Summaries for each blank analyzed	____	____	____	____

9. **Comments:**

Completed by:

(CLP Lab) _____ _____ _____
(Signature) (Print Name & Title) (Date)

Audited by:

(USEPA) _____ _____ _____
(Signature) (Print Name & Title) (Date)